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Politics this week

Dec 4th 2003
From The Economist print edition

Call for elections

AFP

Iraq's most influential Shia ayatollah, Ali Sistani, demanded that even the transitional assembly due to take shape next May be elected rather than chosen by caucuses, as planned by the ruling American-led provisional authority. The 111 deaths of coalition troops in November was the highest figure since the end of the conventional phase of the war in Iraq.

See article: Salvaging Iraq

George Bush flew to Iraq to share a **Thanksgiving meal** with American troops.

Leaders of most of the **Commonwealth's** 54 countries gathered in Nigeria's capital, Abuja—minus the uninvited Robert Mugabe, Zimbabwe's president. In his own annual state-of-the-nation speech Mr Mugabe vowed to crack down on corruption and to curb inflation—currently officially 526% but estimated to be much higher—through price controls.

Three Rwandan media executives were jailed, two for life, for helping to incite the **genocide** of 1994 with slogans such as “the graves are not yet full.”

Israel's government criticised the American secretary of state, Colin Powell, for agreeing to meet the authors of the Geneva accord, a freelance peace plan aimed at resolving differences between Israelis and Palestinians.

See article: Striking accord

On the eve of a visit to **Georgia** by the American defence secretary, Donald Rumsfeld, the Americans warned Russia that it should pull its troops out of the country. America also wants Russia to keep its promises to leave Moldova.

Vox populi

The Italian parliament passed a new media law that critics say is meant to benefit **Silvio Berlusconi**, the prime minister, who has direct or indirect influence over as much as 95% of Italian television. The opposition is lobbying Italy's president, Carlo Azeglio Ciampi, to refuse to sign the law.

European foreign ministers, meeting in Naples to thrash out the draft **European Union constitution**, settled few of the outstanding disputes. Joschka Fischer, Germany's foreign minister, declared that he was leaving Naples gloomier than he arrived. Next weekend's summit in Brussels may now run for four days.

See article: Arguments on an EU constitution

EPA

President Jacques Chirac flew to the scene of devastating **floods in southern France**. He and his government are determined not to be caught napping, as they were during the summer's lethal heatwave.

Sajid Badat, a British Muslim and a suspected accomplice of Richard Reid, the “shoe-bomber”, has been charged with **plotting terrorist attacks** in Britain

and abroad. He is one of 22 terror suspects arrested in Britain over the past week. Mr Reid is serving a life sentence in the United States.

See article: Britain's terror suspects

Lithuanian political parties are preparing to impeach President Rolandas Paksas. Earlier, parliament adopted a report calling him a threat to national security and charging that his office was under the influence of criminals and shady political lobbyists. Mr Paksas refused to resign.

Welcome, maybe

America's Department of Homeland Security ended a controversial **registration programme** that fingerprinted and tracked male temporary visitors from Middle Eastern countries. A new general visa-entry system, US-VISIT, starts in January.

The trial began of Bill Janklow, the Republican congressman for South Dakota, on a charge of **manslaughter**. Mr Janklow is accused of speeding and killing a motorcyclist last August.

America's Department of Defence finally decided to allow Yaser Esam Hamdi, an American citizen captured in Afghanistan and held as an "**enemy combatant**" in South Carolina, access to a lawyer as a "matter of discretion". The move came as the United States Supreme Court is deciding whether to review his detention.

Colorado's state Supreme Court threw out a fresh congressional **redistricting** map designed to favour the state's Republicans. The state had only recently revised the boundaries in response to the 2000 census, a procedure that the court ruled should be implemented only once every ten years.

Hearing the (re)call

EPA

Venezuela's opposition claimed to have collected some 3.6m signatures in support of a referendum to recall President Hugo Chávez, well above the 2.4m required under the constitution. "Mega-fraud," fumed Mr Chávez. Not so, said César Gaviria, the secretary-general of the Organisation of American States, who had helped observe the signature drive.

See article: A referendum on Hugo Chávez

In an acrimonious public wrangle, the Institutional Revolutionary Party, the largest in **Mexico's** Congress, dumped its congressional leader, Elba Esther Gordillo. She had tried to persuade the party to back President Vicente Fox's reform programme.

See article: Uproar in Mexico's biggest political party

A committee representing some of **Argentina's** private creditors unveiled a proposal for restructuring the country's defaulted debt. Its scheme involves writing off about 60% of the net present value of the debt, compared with 92% in the government's proposal.

See article: Argentina's surprisingly vigorous economic rebound

Harmony in the air

Reuters

Following last week's cease-fire agreement, **India and Pakistan** have agreed to resume direct air links from January 1st after a two-year ban. Pakistan's President Pervez Musharraf offered to pull back troops from Pakistan-administered Kashmir, if India did the same in its part of the disputed territory.

India's ruling Bharatiya Janata Party (BJP) made advances against the opposition Congress party in state elections in Madhya Pradesh, Rajasthan, Chhattisgarh and Delhi. The results are expected to be a preview of general elections due next year.

See article: State elections in India

Siti Hardiyanti Rukmana, the daughter of **Indonesia's** former president Suharto (who was toppled in 1998), plans to stand as a candidate in next year's presidential elections. A corruption investigation against her was dropped earlier this year.

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Business this week

Dec 4th 2003
From The Economist print edition

The dollar's decline

The **dollar** continued its downward tumble, falling beyond $1.20 per euro, its weakest level since the euro's launch in 1999. Since hitting its low against the dollar in July 2001, the euro has rebounded by 44%.

See article: Dollar woes

Sibneft, a Russian energy company, froze its $11 billion merger with rival oil firm **Yukos**, making a deal increasingly unlikely. The merger would have created the world's sixth-biggest public energy company. Yukos's former boss, Mikhail Khodorkovsky, was jailed six weeks ago and forced to resign his post.

See article: Anatoly Chubais, the acceptable face of Russian business?

The French government rejected a settlement with Californian prosecutors over the acquisition of **Executive Life**, an American insurer, by **Crédit Lyonnais** in the early 1990s, setting the stage for a trial in America in which the French government could itself be a defendant. Negotiations collapsed because the settlement excluded top French businessmen, including François Pinault, a close friend of France's president, Jacques Chirac.

Bowing to pressure from customers, governments and universities, **Microsoft** announced a new, more open scheme for licensing its software technology.

Changes at the top

Phil Condit stepped down as chief executive of **Boeing**, the beleaguered defense company, after seven years on the job. Profits have been hit hard by the near-collapse of the company's commercial space-launch business, a dwindling share of the aircraft market and a government investigation into its military business. Harry Stonecipher, a former boss of McDonnell Douglas and Boeing's deputy chairman until he retired last year, is to take over the reins.

See article: Boeing, Boeing, gone

Bengt Braun, chairman of **Skandia**, the biggest Swedish insurer, also resigned this week, after an independent probe into an unfolding scandal involving secret bonuses and other payouts found that former company bosses acted unethically and, possibly, criminally. Skandia's boss has not been accused of wrongdoing. His is the fourth high-level departure at the company since the scandal broke.

See article: An insurer's blighted reputation

A boardroom brawl erupted at **Walt Disney Company**, with the back-to-back resignations of Stanley Gold and Roy Disney, nephew of the founder of the eponymous company. Both are calling for the removal of chairman and chief executive Michael Eisner.

See article: Disney's boardroom battle

More messiness

America's mutual-fund scandal continues to grow. Richard Strong, chief executive and founder of **Strong Financial**, a mutual-fund company under investigation for crooked trading practices, resigned. The company has been put on the block. Mr Strong admitted to conducting dodgy trades on behalf of himself and his family. Separately, securities regulators filed civil charges against **Invesco Funds Group**, the American unit of Britain's **Amvescap**, and its chief executive Raymond Cunningham for improper trading. Amvescap is fighting the charges.

The **Securities and Exchange Commission** has proposed reforms for the mutual-fund industry. It wants financial intermediaries to place trading orders before the stockmarket closes, more independent fund boards and clearer statements of funds' policies on other disputed trading practices.

See article: The SEC proposes new rules

Insolvency

Ashikaga Bank, a Japanese regional bank, was nationalised after government inspectors belatedly discovered that the bank was insolvent. Investors are closely watching a clutch of other regional banks. The government bailout of the bank is expected to cost some ¥1 trillion ($9.2 billion).

See article: A regional bank is nationalised

SCOR, a struggling French reinsurer, is seeking *euro*750m ($910m) in new capital from shareholders, *euro*150m more than previously announced. It also plans to sell its headquarters and various corporate properties to raise cash. The failure of chief executive Denis Kessler to sell the firm's life-insurance arm and its subsidiary in Bermuda means the firm needs funds fast to nurse itself back to financial health.

The world's second-biggest drug company, **GlaxoSmithKline**, announced that it has 82 new drugs and 20 new vaccines in development in an effort to impress investors. The firm's shareholders, however, were unimpressed. GSK's shares fell.

See article: Big Pharma

Northrop Grumman and **Raytheon** won a Pentagon contract valued at as much as $4.5 billion to develop a rocket capable of intercepting airborne enemy missles.

Up, up and away

American **manufacturing activity** surged over 10% in November, the most robust growth in two decades, beating even optimistic forecasts and signalling that America's economic recovery is on a solid footing.

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World economy

The not-so-mighty dollar

Dec 4th 2003
From The Economist print edition

The dollar's slide has further to go, but if handled carefully it could help not harm the world economy

Get article background

“DOLLAR Plunges” or “Euro Soars” make good front-page headlines. But the dollar's slide over the past two years has seemed too gradual to qualify for such treatment, and has mostly been reported on inside pages, along with more run-of-the-mill economic news. Yet the total movement in the dollar-euro exchange rate has been far from tame: in July 2001 one euro bought just under 84 cents; this week it hit a new high of over $1.20. Depending on how you look at it, this is a 44% rise in the euro or a 31% fall in the dollar. However measured, the change in the relative values of the two currencies is significant for a host of reasons, and deserves a lot more attention, not least because the dollar seems likely to fall still further (see article).

To most people exchange rates simply determine how much cash they have to spend when on holiday abroad. But the dollar's exchange rate against the euro is surely the world's single most important price, with potentially much bigger economic consequences than the prices of oil and computer chips, for example. The strength of the dollar affects trade balances, capital flows, growth rates, profits, share prices, inflation rates, interest rates and even the relative size of economies. The euro area's GDP was only 60% the size of America's in 2001. If current exchange rates are sustained, it swells to around 80%. If the economies of Britain, Sweden and Denmark are added to the euro area, the European Union now has a slightly larger economy than that of the United States.

At first sight it seems odd that the dollar is falling. The American economy and profits are sprinting ahead, while the euro area's economies are barely able to maintain a walking pace and Japan is just getting off its knees. In the year to the third quarter, America's GDP grew by 3.5% and euro area's by a dismal 0.3%. Although Japan's real GDP grew by 2.3%, its nominal GDP was flat.

America's red ink

Surely, stronger American growth should be pushing the dollar higher, not lower? That is what happened during the late 1990s. But the problem this time is that, if domestic demand grows much more strongly in America than in its main trading partners, America's already large current-account deficit swells further because it imports more. America then needs to borrow even more from the rest of the world to finance that deficit. And the real cause of America's growing taste for imports, of course, is not unfairly cheap production in China—usually named as the culprit—but its low saving, the result of rampant household borrowing and a huge federal budget deficit. So long as these persist, it will take an even bigger fall in the dollar to correct America's external deficit.

A few years ago, foreign investors were eager to purchase dollar assets. But now investors seem to be losing their appetite. Foreigners were net sellers of American shares in the third quarter, leaving America dependent on other governments' purchases of American Treasury bonds. Net capital inflows into America fell to only $4 billion in September, their lowest for five years. If the demand for dollars falls short of supply, then either the dollar must fall or American bond yields must rise to make dollars more attractive to investors.

Is a weaker dollar cause for concern? For America, it should be a boon, helping to boost exports, profits and jobs. The usual worry that a falling currency will lift inflation is also lessened, because America still has ample spare capacity and its inflation rate (1.3% on its core measure, excluding energy and food) is, if anything, too low—the Fed would welcome a modest rise. If a continuing gradual fall in the dollar trims the current-account deficit, this could, paradoxically, also lessen the chance of a sudden collapse of confidence in the dollar.

Europe's opportunity

In Europe a weak dollar is feared and resented. Politicians and businessmen worry that America's gain will be their loss, and that their own firms will become less competitive as a result. And yet a rising euro need not be bad news for Europe. In fact, if the European Central Bank (ECB) responds in the correct way, it could be just the opposite: the kind of good news the euro area badly needs.

Unfortunately, that is a big “if”, given the ECB's proven reluctance to reduce interest rates. And yet a stronger euro not only should make it easier for the ECB to cut rates while holding inflation down, it also should make such reductions imperative because the rise in the euro itself is equivalent to a tightening of monetary conditions.

Although manufacturers may be hurt in the short term by the euro's rise, the euro area's economy as a whole should benefit. A stronger exchange rate improves any economy's terms of trade, and so boosts consumers' spending power: they can buy more foreign goods in exchange for the same amount of domestic production. Lower interest rates will also, at last, boost Europe's feeble domestic demand, which has long been a big drag on euro-area economies. Finally, a stronger euro should force politicians and firms in Europe to pursue the kind of painful but necessary structural reforms which they have long talked about, but resisted making.

Many of the same arguments apply to Japan, where a weaker dollar is also feared. Japan's options are more restricted. It cannot cut interest rates below zero. But if foreign-exchange intervention is allowed to feed into the money supply (in effect, by printing yen to buy dollars), then this, too, would be a useful form of monetary easing.

The Japanese and Europeans may ask why they should be forced to adjust to imbalances in the world economy caused by profligate American consumers and an even more profligate American government. They should be grateful for America's profligacy: those borrowing-and-spending habits, though plainly unsustainable, have recently been the major engine of global growth. It is past time for others to do their part. The ECB, in particular, must boldly seize the opportunity presented by the euro's rise. If euro-area GDP growth now slows, the ECB will be to blame, not the rise in the dollar.

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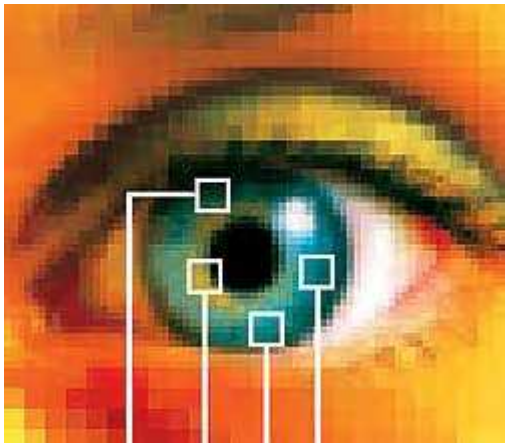
Biometrics

Too flaky to trust

Dec 4th 2003
From The Economist print edition

Body-recognition technology is not the silver bullet many governments imagine it to be

Moshe Katvan



THE ability to recognise people automatically by analysing bodily characteristics such as fingerprints, faces and eyeballs—collectively known as biometrics—has long been a goal of technologists and governments alike. Plans for large-scale projects to incorporate biometric scans into passports, identity cards and visas are now under way in several countries (see article). From January 5th, America will begin scanning foreigners from particular countries as they arrive at its airports. Both America and Europe plan to start issuing biometric passports as soon as next year. Biometric identity cards are being adopted in Hong Kong and Oman, and Britain plans to follow suit.

Politicians seem to be transfixed by the technology. Typical was the recent declaration by David Blunkett, Britain's home secretary, that biometrics "will make identity theft and multiple identity impossible—not nearly impossible, impossible." This claim is absurd. Current biometric technology is not the answer to the world's security fears.

Biometric technology has been around for quite a while, but has not been widely adopted, for good reason: while it can improve security in some situations, its costs more frequently far outweigh its benefits. Even the most advanced systems falsely reject a small proportion of legitimate users, and falsely accept illegitimate ones.

At best, the introduction of biometric identity documents will produce a marginal increase in security, at enormous cost. But at worst, biometrics could, in fact, reduce security in several ways. Even a system that is 99.99% accurate will wrongly finger one traveller in 10,000 as a failed match; such individuals will then be taken aside for "secondary screening". Given the volume of air traffic, the incidence of false alarms will vastly outnumber the rare occasions when someone tries to subvert the system. The false alarms will either have to be ignored, rendering the system useless, or a time-consuming and expensive secondary-screening system will be needed. Anyone who wants to cross a border illegally, meanwhile, will avoid airports altogether, and instead take advantage of far more porous land and sea borders. Biometrics could also undermine security by diverting funds from other, more sensible security measures, and by providing a false sense of security.

Many technologists and security experts have pointed out these drawbacks, but governments seem determined to press ahead even so. Biometrics seem to be attractive to politicians because the technology, long familiar from science-fiction and spy films, gives the impression that something dramatic is being done to improve security. Who would want to risk a repeat of the terrorist attacks of September 11th? The irony, of course, is that biometrics would have done little or nothing to prevent them. Most of the hijackers travelled under their own names, rather than on false documents.

For years, lobby groups have campaigned against biometrics on the grounds that they will undermine privacy and lead to the setting up of Big-Brotherish monitoring systems by governments. In fact, there is not much danger of this happening with today's flaky biometric technology. If and when it improves, such privacy issues will need to be addressed. But at the moment the greater danger is that governments are investing too much faith and too much money, with too little public debate, in an immature technology that is unlikely to improve the security of their citizens, and could very well reduce it.

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Israel and Palestine

Blessed are the peacemakers

Dec 4th 2003
From The Economist print edition

Even when they are unauthorised

Reuters

LISTEN to the fulminations of the critics and you might conclude that the Israelis and Palestinians who unveiled a freelance peace plan at a media event in Geneva this week had come up with some startling and dangerous new idea. Some Israeli politicians and American newspaper columnists called the plan a recipe for Jewish national suicide. Palestinians in the occupied territories took to the streets to denounce the plan for betraying their rights. Ehud Olmert, Israel's vice prime minister, accused Colin Powell, America's secretary of state, of making a “wrong step” in agreeing to meet the plan's authors. “I think he is not helping the process,” Mr Olmert said.

In point of fact, the Geneva plan is not new at all. It is in essence not very different from the plan the government of Ehud Barak offered Yasser Arafat at the Camp David summit of 2000 and elaborated during further negotiations at Taba in early 2001. It comes very close to the “parameters” described by Bill Clinton at around the same time. It looks much like the sort of settlement George Bush envisages as the final destination of the so-called “road map” he has laid down for peace in Palestine, which both Ariel Sharon and Yasser Arafat say they are trying to follow. Indeed, it is based not just on previous and existing diplomacy but also on common sense, which dictates that peace must be based on two peoples sharing Palestine between two states, with a border more or less on the armistice line that separated Israel and its neighbours between 1948 and 1967. The rage against this inoffensive plan is depressing because it shows how far the official leadership on each side still is from making the inevitable compromises.

On the Palestinian side, the hardest compromise is renouncing the so-called “right of return”. After their leaders rejected the United Nations' partition plan of 1947, some 600,000 of Palestine's Arabs fled or were forced out of their homes in the war that followed. With their descendants, this group now numbers many millions. Were even half of them to return to Israel proper, which now contains about 5m Jews and more than 1m Arabs, Jews would soon become a minority in the Jewish state. Israelis are therefore right to see the Palestinians' insistence on this supposed right as a formula for Israel's dissolution, inconsistent with the idea of two states for two peoples. The Geneva plan says sensibly that the bulk of refugees must settle (with compensation) where they are or in the independent Palestine in the West Bank and Gaza.

For Israel, the hard compromises are territorial. The Geneva plan says that many of the settlements Israel has built in the occupied territories will have to be dismantled and that Jerusalem, which Israel claims for itself, must become a shared capital. Under the plan (as under the Camp David and Taba plans) Israel will be allowed to thicken its 1967 waistline, annexing land where many settlers live, but

only in exchange for giving an equivalent amount of pre-1967 Israel to the new Palestine. This again is a sensible compromise, one that should satisfy Palestinian honour while minimising the trauma that evacuating every single settlement would inflict on Israel, and which might therefore prevent a deal.

Its own authors acknowledge that many details of the Geneva blueprint would be redrafted in the event of a real negotiation between governments. But its broad principles should be perfectly acceptable to anyone who claims to believe in a two-state solution. And, as it happens, both Mr Arafat and Mr Sharon keep saying that they do. So why don't they sit down and negotiate? Simple. First, Mr Sharon says that Mr Arafat has masterminded the terror of the Palestinian *intifada* and so ruled himself out as an interlocutor. Israel and America say that they are waiting for a better Palestinian leader—perhaps the new prime minister, Ahmed Qurei—to come along and prove his independence from Mr Arafat. Second, neither side believes that the other really accepts the idea of partition. Palestinians assume that the most they can expect from Mr Sharon is a patchwork of bantustans. Israelis suspect that Mr Arafat's refusal to give up the right of return shows that his real intention is still to destroy the Jewish state.

In circumstances as forlorn as these, it makes little sense for people such as Mr Olmert to complain that the freelance peacemakers are not helping “the process”. Right now, with America fixated on Iraq and its own impending elections, there is not much process to speak of except for this virtual one. The official road map seems all but dead. The freelancers can at least persuade the people on each side that a peace is imaginable. They might even shame their respective leaderships into some real action. More power to their elbow.

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A tale of two boards

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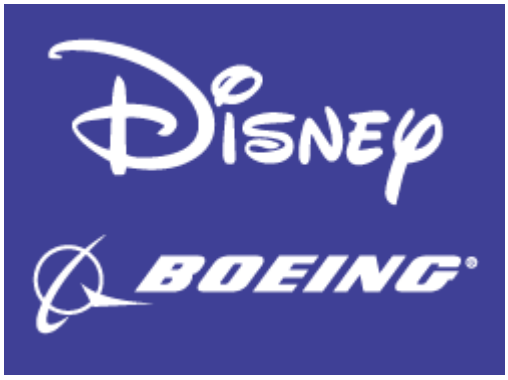
Disney, Boeing and the accountability of bosses



HAVING spent prodigious amounts of energy in the past couple of years advising, regulating and legislating better behaviour in the nation's boardrooms, Americans may be starting to feel the need to take stock of their achievements in the uncertain struggle for improved governance of their errant companies. And what better moment to test the new climate than now, with boardroom ructions at two of the country's best-known firms grabbing the headlines this week? At Disney, two board directors resigned, both fuming at the firm's long-time boss, Michael Eisner. At Boeing, the boss himself went, after a scandal involving an ex-Pentagon employee claimed the firm's top financial officer. Are these signs that all the tedious governance seminars and incomprehensible new rule books are at last beginning to produce real results?

Well, no, actually. The principal lesson from Disney appears to be that, with someone as clever and overbearing as Mr Eisner at the top, the most brilliantly designed governance rules in the world can sometimes mean zilch. Disney's board spent 2002 in earnest discussion with Ira Millstein, a top governance guru, about how to strengthen its independence from Mr Eisner. By the end of last year, Disney felt able to publicise its exciting boardroom changes, new guidelines which were “another sign of Disney's commitment to maintaining a leadership role in corporate governance.”

It now appears that some board directors disagreed with this rosy prognosis. In his resignation letter, Stanley Gold accuses Mr Eisner of perverting the course of reform to polish off his boardroom enemies. Disney defined its directors' “independence” in a way which prevented the really independent ones (Mr Gold and Roy Disney, nephew of founder Walt, who also resigned this week) from serving on important board committees, leaving weighty matters such as Mr Eisner's salary in the hands of his cronies. Twelve months after completing his good-governance overhaul, Mr Eisner has managed to purge his board of all dissenting voices, an achievement that inspires a certain admiration for the man's cunning, but nevertheless leaves room to doubt the efficacy of rules-based solutions alone for the boardroom.

As quiet as a mouse

The lesson from Boeing, meanwhile, seems to be that good governance and a tough, independent board do not guarantee good corporate behaviour. Boeing's board is packed with redoubtable figures such as John Shalikashvili, a former chairman of the joint chiefs of staff, and James McNerney, 3M's boss. Despite quibbles, the firm has a reasonably good reputation among governance experts and activist shareholders and their advisers. Yet all year, Boeing has been dogged by reports of one breach of ethics after another, from stealing documents from competitors to oiling the revolving door at the Pentagon, its biggest customer, too enthusiastically.

Ah, but didn't the board do the right thing, and prompt the firm's boss, Phil Condit, to fall on his sword? Yes, but not for reasons that would necessarily cheer fans of stronger governance—if by that is meant stronger exercise of ownership rights by shareholders. Boeing's big shareholders appear indifferent to Mr Condit's sudden departure. It remains to be seen whether Disney's shareholders will be moved by the complaints of Messrs Gold and Disney. The reason for shareholder complacency at both firms seems to be their share prices, which since March have shot up by 53% at Disney and 52% at Boeing.

Mr Condit may have gone because his biggest customer, the Pentagon, finally lost patience with all those stories about naughty behaviour at Boeing. Despite his many governance failings, Mr Eisner seems more secure at Disney than he has been for a long time—at least until Disney's performance begins to falter again. If they want real reform, America's biggest shareholders will have to learn how to get angry when they are making money, not just when they are losing it.

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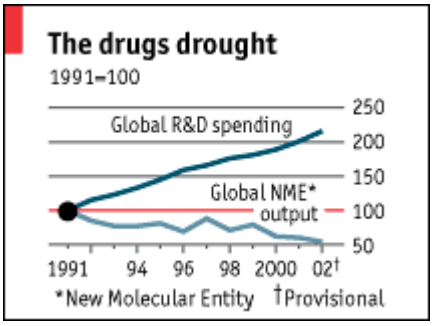
Big Pharma

The benefits of hypertension

Dec 4th 2003
From The Economist print edition

Growing pressure on pharmaceutical firms is a force for good

Get article background



FIRMS today fall from grace with the alarming ease of wayward bishops; few industries, however, have tumbled as far, as fast and on as many fronts as drugmakers. Only five years ago, big firms were celebrated as the purveyors of exciting new medicines, such as Viagra, and even more stimulating earnings growth.

Today, firms are seen by many as more profiteering than profit-making. Companies are castigated for spending billions on research and development, only to deliver too many “me too” drugs and too few genuinely new ones. Comparable sums spent on sales and marketing—particularly on direct-to-consumer advertising in America—are lambasted for corrupting doctors and creating demand on the back of fancy publicity rather than legitimate medical need or product superiority. Efforts to fend off lower-cost competition from manufacturers of generic drugs through patent lawsuits leave companies accused of driving up the drugs bill in rich countries and depriving millions of life-saving medicines in poor ones. The shares of most big drug firms now trade at a discount to the market, as promises of bright times ahead are marred by risk.

To be sure, pharma companies come in for criticism not just because they are more profitable than those in other sectors but because they are profitable in a field, medicine, where money makes people uneasy. And not only are drug companies profitable, but also visible: in America, rising hospital and physician costs are as much to blame for soaring insurance premiums as pharmaceuticals, but it is drugs which are the most obvious recurring expense and the one that consumers are asked, at least in part, to shoulder directly. Firms are caught between shareholders, who fear drug prices will fall, and consumers, who complain about their rise.

Some of the pain which big firms now feel is undoubtedly self-inflicted. Firms were slow to recognise the gathering storm around the lack of access to life-saving drugs in the developing world. Their public relations on most other issues remains pretty clumsy too, and their promises to investors have been overblown.

And yet it is also true that producing new drugs today has become a more complicated, costly and risky business than before and many firms now face a couple of years during which they will have relatively few new products coming to market. For example, using the human genome to identify promising new treatments is proving a much more difficult scientific task than many had predicted, and it will be many years before the promised flood of new drugs occurs.

Current pressures on pharmaceutical firms are forcing a long-overdue examination of how they organise research and development and these changes could cut the cost, in time and money, of R&D and eventually boost output (see article). GlaxoSmithKline, the world's second-largest company, this week showed early signs that such root-and-branch re-engineering is starting to bear fruit. The final step drug firms will need to take is to prove that the drugs they produce really do justify the prices charged, in conferring appreciable benefits compared with existing therapies.

No quick fix

Drug firms cannot be expected to achieve this on their own. Like all firms, they respond to incentives,

and only more intelligent behaviour by regulators and customers alike—whether the public-heath systems of Europe and elsewhere or the public and private insurance schemes of America—can provide the correct signals.

Currently, many drug prices in America, for example, are set largely by what other drugs in the same class cost and how much others are paying. What prices should be based on is a rigorous assessment of the benefit, measured across various parameters, which a new drug brings to individual consumers and society more broadly, above and beyond existing treatments. Admittedly, this is no easy task. But it is not impossible. Some countries in Europe, for example, have set up independent agencies to undertake such cost-benefit analysis.

However, governments often use such analyses solely to beat down prices, and are unwilling to reward genuine innovation when they find it by paying higher prices for better drugs. America, on the other hand, tends to pay for novelty without systematically assessing its value. Both European and American customers of the industry need to change. Companies are understandably wary of throwing lots of money into comparative trials only to show that their new medicine is not much better than a rival's. And yet governments should encourage such trials, occasionally by providing direct financial assistance for them, but more often by promising to pay more for drugs which are significantly and demonstrably better.

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Letters

Dec 4th 2003
From The Economist print edition

The Economist, 25 St James's Street, London SW1A 1HG
FAX: 020 7839 2968 E-MAIL: letters@economist.com

Free trade

SIR – Your leader on American trade policy is notable for its fervour, not its reasoning ("Failing on trade", November 29th 2003). America played a key role in launching the Doha World Trade Organisation (WTO) negotiations, advanced them by proposing the elimination of all tariffs on goods and huge cuts in agricultural tariffs and subsidies, and solved the contentious access-to-medicines issue before the Cancún ministerial. After Cancún, America suggested a resumption based on the draft Cancún text, an idea that has won widespread support around the world. A realistic assessment is that progress now will depend on the European Union's willingness to eliminate agricultural export subsidies; the EU and Japan being flexible on opening agricultural market access as well as cutting other subsidies, along with America; mid-level developing countries lowering their barriers for goods, agriculture, and services; a compromise on the so-called "Singapore issues"; and continued commitment from America.

As others determine their interest and flexibility in the WTO negotiations, American trade policy is freeing trade all around the world. Contrary to your assertion, America's high-standard Free Trade Agreements (FTA)—in place or in negotiation—are covering an expanding proportion of our trade. If one excludes the EU-25, Japan, and Korea (all of which resist FTAs that liberalise trade in agriculture), plus a China that has just entered the WTO, our current and in-process FTA partners total 73% of America's exports and 69% of our trade. In the Americas, such partners represent 68% of the GDP of the hemisphere, not counting the United States. In addition, we are pushing for a Free Trade Area of the Americas that will open more markets with Mercosur and the Caribbean, too.

As for textile safeguards that cover a minimal amount of China's forecasted $125 billion trade surplus with America, trade with China will expand sustainably when all parties realise that WTO provisions—including China's commitments on agriculture, intellectual property, services, and distribution—need to be enforced fairly.

The Economist's huffing about the openness of American markets may benefit from recalling a number: America is importing over $500 billion more than it exports. That figure—and the Bush administration's firm negotiating record—does not comport with your conclusion or poor reading of history.

Robert Zoellick
US trade representative
Washington, DC

Swiss banking

SIR – Your article on Swiss private banks misses the point when you say that "expansion is especially difficult for the handful of private banks, such as Pictet, which are partnerships and which therefore lack the capital to fund rapid growth" ("Abroad thoughts from home", November 15th). First, rapid growth does not always equate with quality. Pictet has constantly grown ever since our birth in 1805, patiently but surely. Being a private partnership, without doubt, is a fundamental factor behind nearly 200 years of continual expansion and constant profitability. The risks posed by being too dependent on the private-banking business in Switzerland involve ignoring the number-one rule for wise investment management: diversification. We are surprised, however, that you put Pictet into this basket.

With assets of over SFr112 billion ($87 billion) under management, Pictet has a significant local presence in London, Luxembourg, Hong Kong, Tokyo, Singapore, Montreal and Nassau. Since 2000, we have

successively opened offices in Milan, Turin, Frankfurt and Madrid. Pictet is Switzerland's third institutional asset manager after UBS and Credit Suisse. Our European fund-distribution business, launched just five years ago, has reached fourth place in market share in Switzerland, just behind giants such as UBS and Credit Suisse.

Rémy Best
Managing partner
Pictet & Cie
Geneva

Quacky races

SIR – As someone "mad-as-hell", I wish to point out that the reasons you say Howard Dean would lose in the election are the very reasons we angry people think he might just win ("Howard the duck", November 15th). Denouncing Howard Dean as a McGovern-type candidate has become a cliché for those convinced he is too liberal to win the presidency. As much as I wish he were a liberal, Howard Dean is a favourite of the National Rifle Association, supported the death-penalty and the first Gulf war, and as governor repeatedly clashed with the left-leaning Vermont legislature. However, his stance on the war in Iraq succeeded in convincing the media and the nation of his leftist credentials. If he could so easily con the nation into believing this, could he not just as easily revert to the quite centrist Howard Dean that Vermonters remember?

The Democrats need a candidate who differs from President Bush, but still has the political and organisational skills to match him. That candidate is Howard Dean by a landslide.

Megan McQueeney
Santa Barbara, California

Currying favour

SIR – Your article on the Indian IT industry in America quotes a spokesman from the pro-outsourcing lobby who states that the goal of Indian IT companies buying American firms is to "convince Americans that they are not just Indian companies but 'global firms, with a local face here'." ("Bangalore, Texas", November 22nd). The current outsourcing technique used by Indian firms is to keep local, better-paid staff until they can train their cheaper Indian replacements—at which time they are fired.

These replacements then remain in the host-country on non-immigrant visas where they perform exactly the same duties as the local staff, or prepare the work to be shifted back to India to be done even more cheaply. Such tactics will make it hard to convince anyone that these firms are truly global.

Scott Kirwin
President
IT Professionals Association of America
Wilmington, Delaware

Governing Mexico

SIR – Your assertion that Andrés Manuel López Obrador is a pragmatic leftist is correct but not in the way you intend ("The man who would be president", November 15th). His pragmatism centres on securing power; everything he does has that end. If he were to become president, the social programmes he has undertaken in Mexico City would have little or no chance of success at a national level, let alone gain the approval of a Congress that would be controlled by the opposition. It is important to remember that Mexico City is totally different from the rest of the country.

Moreover, Mr López Obrador's populism is indistinguishable from that of the old Institutional Revolutionary Party (PRI)—after all he was a member—and Mexico had 71 years of that with little or nothing to show for it. In Mexico, as in most of Latin America, we do not need another charismatic, populist leader. Enough is enough.

Max Stenner
Chihuahua, Mexico

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Salvaging Iraq

Doomed, or still recoverable?

Dec 4th 2003 | BAGHDAD, NAJAF, SAMARRA AND SAMAWA
From The Economist print edition

Getty Images

Iraq is on the edge. It is unclear, for America and its Iraqi allies, whether success or failure beckons. But progress towards peace and prosperity is still feasible, just

Get article background

IT DEPENDS whom you listen to. One top American soldier says that the battle this week in Samarra, a town of 180,000 at the heart of Iraq's sullen and violent “Sunni Triangle” to the north and west of Baghdad, marks a turning point—on the road towards military success for the ruling American-led coalition. The Americans say that 54 insurgents, some wearing the uniforms of Saddam Hussein's *fedayeen* militia, were killed after an American convoy was caught in a series of ambushes.

The ferocity with which the Americans returned fire shows, it is said, a new determination to hit back hard, rather than wait tamely while their enemies melt away into the maze-like alleyways of Iraq's small towns. If the success of this American counter-attack is emulated elsewhere, the insurgents would start to lose ground—and more Iraqis might start to co-operate with the coalition forces. As the trend spread, Iraq would gradually be brought to peace. That, at least, is the theory.

But locals offer a different version of what happened in Samarra. The Americans' figure of insurgent casualties, they say, is wildly exaggerated. And they insist that the resentment caused by the attack far outweighs any military gain. From his hospital bed, an 80-year-old sheikh who was caught in the crossfire wobbles his fist in fury. “If there were 1,000 *fedayeen* before, now there will be 3,500,” he wheezes. Even the town's American-paid police chief says that the Americans “provoked” a popular—and violent—reaction. Black “martyr” flags inscribed with the name of a ten-year-old boy killed in the fighting are pinned to walls across town that are covered with graffiti calling Iraqis to arms.

A pharmacist says that the town's women now stay dressed before going to bed, lest unbelievers on their night raids find them naked. The arrest last month of the wife of one of Saddam Hussein's vice-presidents appears to have enraged locals, who accuse America of adopting the tribal practice of taking relatives hostage. Several Samarrans claim to refuse American salaries. “We would rather chew dirt,” said a teacher. “Saddam Hussein is not orchestrating or financing our resistance,” said a major who lost his job when the Iraqi army was disbanded in May. “But he represents our flag.” In short, if Samarra is any guide, the Americans' latest tactics may well alienate many more Iraqis, especially the already disaffected Sunnis who ran the show under Mr Hussein.

Mother of all months

For the coalition, November was the worst month in terms of casualties—111 dead, including 79 Americans—since Mr Hussein was toppled. That is more than twice the rate in the early summer. It certainly makes the job of the civilians trying to oversee the economic and political rebuilding of Iraq immeasurably harder, if not impossible. Very few of the 1,200-odd people in the ruling Coalition Provisional Authority (CPA) dare walk around Baghdad, getting to know the people and offering reassurance. Instead, they are cocooned in an array of grandiose buildings behind a massive web of concrete blocks, barricades and barbed wire in a so-called Green Zone which they rarely leave unescorted.

Baghdad itself continues to splutter back to commercial life, though the mayhem of traffic—no one seems to bother, for instance, if roundabouts are negotiated the wrong way round—suggests that barely suppressed lawlessness lies beneath the surface. As soon as darkness falls, few people drive or walk about. The silence of the night is punctuated by random bursts of gunfire. The capital's top three hotels have been hit by rockets or mortars in the past few months. Those who want to see the Americans fail, including, apparently, many in the Arab world beyond Iraq, were much chuffed last month when two separate attacks were launched, one on a hotel, the other on the oil ministry, from rickety donkey carts that had ambled towards the Green Zone—a potent symbol of how the highest-tech power in the world is

still vulnerable to the anger of the little man.

The insurgents have made sure that not just Americans are frightened. They have targeted America's allies—Spaniards, Italians, Japanese, South Koreans. Do-gooding organisations, too, such as the International Committee of the Red Cross and most notably the United Nations itself, have been victims of murderous bomb attacks. Few charities have dared to stay.

Above all, the insurgents increasingly gun for fellow Iraqis who co-operate with the Americans and their allies. They attack Iraqi police stations. They have assassinated a (female) member of the Governing Council, the top Iraqi body appointed by the Americans, along with the deputy mayor of Baghdad, several judges, a top oil official and several senior policemen. Two top Shia clerics have been murdered; it is unclear by whom, but insurgents have certainly benefited from the resulting tension.

Hoping for chaos

The most likely perpetrators of this violence are former members of Mr Hussein's Baath Party, most but not all of them Sunni Muslims at odds with the emerging new Shia-led order. They aim, quite simply, to make the country ungovernable, so that the Americans will lose their nerve and pull out, leaving Iraq to sink into a welter of anarchy from which remnants of the old regime may re-emerge on top.

General John Abizeid, who oversees the American forces, reckons that the insurgents' hard core is only 5,000 strong, but the number of those willing to help them must be many times higher. Mr Hussein's 400,000-plus army, dissolved by the CPA, provides ample recruiting fodder, as do those senior-to-middling Baathists who were summarily sacked from their jobs or disappeared underground: the number, disputed, ranges from 20,000 to 40,000, out of a party of 2m.

The CPA has yet to discern a clear structure underpinning the insurgency, but it is probably a rough network with roots going far back to the early 1960s, when Mr Hussein and his friends formed an underground movement. Possibly, Mr Hussein himself is its organiser. Before the regime fell in April, says a member of the Governing Council, he arranged for nearly $1 billion in cash to be collected from the Central Bank, presumably to fund a guerrilla war.

The degree to which foreigners have joined the anti-American fray is debated too, but the suicide bombs that killed 22 UN people in August and 19 Italian soldiers last month had all the hallmarks of Muslim fundamentalists from outside, perhaps connected to al-Qaeda. A fair guess is that at least several hundred such zealots have crossed Iraq's utterly porous borders in the past few months, that they are ready to blow up themselves, Americans and their allies, for the cause, and that Mr Hussein's “former regime loyalists” (FRLs, in coalition-speak) have forged a marriage of convenience with them. There have also been reports of growing Islamic fundamentalism in Mosul, in the north, with al-Qaeda sympathisers slipping in from abroad and Wahhabi preachers from the Gulf and Syria stirring things up.

Yet the portrayal of November as the “worst month ever” needs a caveat. The death rate among the allies was certainly the highest since the conventional part of the war ended. But coalition generals say that the rate of attacks by guerrillas since the start, in mid-November, of Operation Iron Hammer and Operation Ivy Cyclone, both of which heralded a more aggressive approach (albeit one that risks more unpopularity), has dropped by nearly half.

What is clearer, in any event, is that the attacks preponderate in the Sunni Triangle between Habbaniya in the west, Baquba to the east of Baghdad and Tikrit in the upper middle, capped by the mixed Sunni Arab and Kurdish city of Mosul in the north. The area immediately to the west and north of Baghdad suffered 35% of all attacks last month (up from 186 recorded incidents in August to 313 in November), while the tally in the capital alone (up from 123 to 216) made up a quarter.

But the area controlled by the Kurds north and east of Mosul and the even bigger chunk of Iraq running from just south of Baghdad to the border with Kuwait are comparatively tranquil. Attacks around Basra and Nasiriya dropped from 27 in August to 14 last month; in the Shias' holy heartland around Najaf, Kerbala and Hilla, the rate steadied from 24 attacks in August to 25 in November. The Kurdish-controlled area and the Shias' in the south and centre, embracing well over half Iraq's population, now witness less than 6% of the violence against the coalition. Indeed, except for the carnage of Italians in Nasariya, not one coalition soldier was killed by insurgents in those two areas last month.

As cash pours in

Moreover, despite the impediments of sabotage and fear and the persistence of massive unemployment, which afflicts at least half the workforce of 7m, the economy is slowly on the mend. So it should be, given the massive amounts of aid—$18.6 billion—that the Americans have promised to dole out, along with pledges of another $14 billion or so from other outside sources. For many Iraqis, living standards have shot up. Labourers get double their pre-war wages, many other public-sector workers between four and ten times more.

Huge amounts of cash are being poured into rebuilding the infrastructure—sewerage, electricity, telecoms, the health service, railways, the port at Umm Qasr, and so on—and are slowly improving it, despite incompetence, cronyism and waste. The electricity supply, though still erratic, is back roughly to its pre-war level, after briefly surpassing it. Most important, oil production is heading for its pre-war level of 2m barrels a day, and is supposed to reach 2.8m b/d in April.

The key to the future, as far as both the economy and security are concerned, is political as much as military. Here too the picture is patchy but, on balance, hopeful. The Kurdish north, where American and British air power has guaranteed autonomy for 12 years, is in good political shape, with its two leaders, Jalal Talabani and Massoud Barzani, co-operating with each other—and, just as important, with their Shia compatriots in the centre and south.

Tensions still exist, however, especially in Mosul, where Sunni Arabs are about two-thirds of the population and Kurds a quarter, and in Kirkuk, which Kurds claim for themselves. The degree of federalism, the restitution of land and property sequestered by Mr Hussein's regime, the reversal of his Arabisation policy, and the demarcation of Kurdistan's borders are all delicate issues yet to be resolved. But the weightiest Kurdish leaders apparently accept that Kurds should have an autonomous region within a decentralised, federal Iraq, rather than outright independence, which would break up the country and might reignite a civil war.

The fractious Shias

The Shia south and centre are harder to pin down. Internal Shia politics are complex and riven with rivalries. Moreover, Shias themselves vary widely over how much they want a religiously oriented state. Most of those who live in the holiest city, Najaf, for instance, look to the Supreme Council for Islamic Revolution in Iraq, better known as SCIRI, led by Abdel Aziz al-Hakim, or to Ibrahim Jafari's Islamic Dawa Party. Both favour an Islamic state, though not an Iranian-style theocracy, and usually defer to Grand Ayatollah Ali Sistani. A firebrand cleric, Muqtada al-Sadr, has a following too. Other, more secular Shias, such as Ahmad Chalabi, the Pentagon's favourite, who leads the Iraqi National Congress, and Iyad Alawi, of the Iraqi National Accord, seek Shia support—especially among the more liberal middle class—by appealing for a more western way.

EPA

Shia prayers may be answered

But the main man among Iraq's main religious group, the Shias, who probably embrace around 60% of the country's people, is the shadowy Mr Sistani. Since he rarely talks to outsiders, and has refused to meet the coalition's proconsul, Paul (“Jerry”) Bremer, agreements with him are hard to nail down.

His bottom line, however, is clear. Iraq's long-oppressed Shias must become the greatest power in the land. Iraq may have a pluralistic kind of federal democracy, with all groups, especially Kurds and Sunnis, represented in a broad government. The constitution will probably have to acknowledge that the Iraqi state has some kind of Muslim “character” or “identity”, with recognised rights for non-Muslims as well as non-Shias. But the Shias must have the main say.

Last month Mr Bremer heeded calls by Mr Sistani that the Americans' hitherto ponderous road towards the writing of a new constitution, involving a new census and the eventual holding of elections before untrammelled power is handed over to the Iraqis, should be abandoned in favour of a much faster route towards the restoration of Iraqi sovereignty and an end to the formal occupation (see timetable). Mr Bremer, egged on by the British, has since embarked on a much speedier course towards Iraqi-isation in virtually all spheres, including the army and police. The provisional government to take office in July would be chosen by a transitional assembly indirectly elected by “caucuses” in each of Iraq's 18 provinces, which themselves would be overseen by groups of notables, some from local councils, others chosen by the present American-appointed Governing Council.

The optimists' timetable

Deadline	Political process
February 28th 2004	Drafting and approval of Fundamental Law (including Bill of Rights, federal arrangements, statutory powers of judges, etc)
End of March 2004	Approval of agreements on security with coalition countries
May 31st 2004	Election of a transitional national assembly
June 30th 2004	New transitional administration to be recognised by the American-led coalition and to assume full sovereign power; Coalition Provisional Authority to dissolve; American-led occupation ends; outside forces, mainly American, likely to be invited to stay on as allies
March 15th 2005	Elections for a constitutional convention to prepare a permanent constitution
December 31st 2005	Elections for a new Iraqi government and expiry of the Fundamental Law
January 2006	Full-blooded, elected sovereign Iraqi government takes charge

Sources: Iraqi Governing Council; *The Economist*

More recently, however, a new glitch has occurred. Mr Sistani is demanding direct elections even to the transitional assembly. Registration of voters, say his proxies, could be based on the ration-card lists that existed under Mr Hussein. No, say the Americans. A set-piece election would be too vulnerable to disruption by the insurgents; the ration-card system excluded many families punished by the regime; and the Kurds had no such system. Besides, some of the non-Shias in the Governing Council are beginning to resent the veto powers of Mr Sistani, who is not, they note, even a native Iraqi (he speaks with a heavy Persian accent). In the end, a compromise may emerge. But the likelihood is that the politician closest to Mr Sistani—perhaps SCIRI's Mr Hakim—will probably become the country's new leader.

All this assumes that the insurgency is containable, even beatable. At least Mr Bremer's CPA and some of his generals see that politics, as much as military force, is the key. “There is no purely military solution,” says one adviser. “If we lose the Shias' consent, we'll lose the campaign,” says a senior soldier. “But we need the consent of the Sunnis to win the campaign.”

This is the trickiest part of any plan to salvage Iraq. The Sunni Arabs account for only 15-20% of Iraqis, but the new Iraq needs a post-Saddam leader for them. The Governing Council has half a dozen of them, but none with much clout. A further trouble is that, so long as the Sunni-based insurgency can cock a snook at the fragile political authority in Baghdad's fenced-off Green Zone, few Sunnis will have the nerve or the chance to go out among their people to preach conciliation.

A perilous handover

Meanwhile, the Iraqi-isation of security is a high-risk policy that could be knocked askew by infiltration, intimidation and over-hasty training. Indeed, the break-neck handover posited in the latest timetable could, if the insurgents make headway, descend into civil war. Sectarian feelings have been kept in check, thanks largely to the Shia and Kurdish leaders. But they are there, and they could explode.

The next six months are crucial. The violence, more noticeably Iraqi-versus-Iraqi, may well grow. It is vital for the would-be rulers that their American friends, whether as allies or occupiers, show not the

slightest sign of wanting to cut and run.

In a gloomy scenario, the anti-American violence, inevitably catching more and more Iraqis in its train, sparks sectarian violence. The Americans give up hope, and beg the United Nations to come in and pick up the bits.

In a happier hypothesis, an emerging Iraqi leadership, with Shias and Kurds finding a tougher anti-Saddamite Sunni leader at their side, gradually faces down the insurgency—and reaps the benefit of American economic largesse and military firepower. It could yet happen. Iraq is still, just, a better-than-evens bet.

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Warding off missiles

An American dream

Dec 4th 2003 | LONDON AND WASHINGTON, DC
From The Economist print edition

AP

Next year, the United States unveils its anti-missile defence system. It cannot make Americans invulnerable, but it may make them safer—eventually

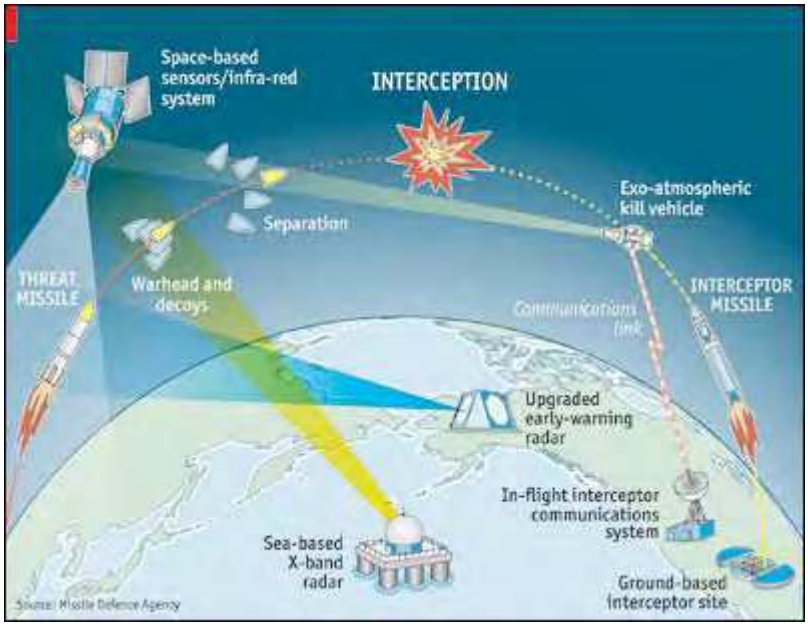
Get article background

FOR half a century, America's leaders have dreamed of erecting a shield above their nation to protect it from incoming ballistic missiles. Such a shield would help their country to recapture the sense of untouchability that its geography, weak neighbours and power inculcated and sustained—until the advent of "mutually assured destruction". The habitual American faith in technology has helped to make the ambition seem feasible: if America can put a man on the moon, then why shouldn't it "hit a bullet with a bullet", as some like to characterise the task of shooting down a missile in space?

Next year, ten interceptors designed to destroy long-range ballistic missiles fired by rogue regimes will be lowered into their silos in California and Alaska. George Bush will doubtless tell the electorate that America is closer than ever before to achieving the dream; his main Democratic challengers will claim the system costs too much and provides little protection. Will Americans really be any safer?

Most Americans' idea of what missile defence involves was shaped by Ronald Reagan's iconic "Star Wars" speech of 1983: "I call upon the scientific community in our country, those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace: to give us the means of rendering nuclear weapons impotent and obsolete." Mr Reagon's famous exhortation has contributed to two popular misconceptions about America's current missile-defence effort. One is that it will be based in space; the other is that it will be able to thwart a multiple missile strike by China or Russia.

In fact, the system to be unveiled by Mr Bush's Missile Defence Agency (MDA) next year is a humbler thing, though still hugely ambitious (see diagram). In theory, a threatening missile will be detected by satellite soon after its launch, and its trajectory tracked by radar. Then an interceptor will be despatched from Alaska or California; out in space, the "exo-atmospheric kill vehicle" (EKV) will separate from its booster, and collide with the attacking missile at around 15,000 miles per hour.



The small number of interceptors scheduled to be deployed—ten next year, with another ten to follow—are intended to provide only a limited defence against an attack by a small hostile power (or possibly an accidental launch by a non-enemy). At first, the system will be able to counter only threats emanating from north-east Asia: read North Korea. By 2005, though, improved radars should also ensure coverage of the Middle East, in case Iran or someone else goes nuclear.

This system, based on shooting down a limited number of missiles during the mid-course phase of their trajectory (ie, between the “boost” and “terminal” phases), is more or less what was proposed by Bill Clinton—whose plans were lambasted for years by Republicans for being insufficiently ambitious. Michael O'Hanlon of the Brookings Institution, a think-tank, quips that the system should be named after Mr Clinton, since much of the necessary spending was done on his watch.

In theory, Mr Bush will move on from this relatively modest beginning to field an array of different defences, able to tackle missiles of every range and in every stage of their flight. The next element scheduled to become operational, in 2005, is designed to destroy short- and medium-range missiles with interceptors fired from ships. The Patriot system, for shooting such missiles down in their “terminal” phase, is already in service, though with mixed success. Technologies designed to tackle missiles in their “boost phase” are still immature, to say the least. Space-based weapons remain a distant prospect.

So how good is the system that will come into operation next year? A senior defence official concedes that it is “modest” and “rudimentary”. The flight tests that have been conducted so far have produced mixed results. Critics allege that those tests have been too easy, failing to simulate the speed and altitude of a real-life enemy missile and the sort of decoys it might release. Some sceptics claim that such counter-measures would render the whole enterprise useless, though North Korea, for example, could probably only manage unsophisticated ones.

As the MDA protests, it is normal for a test sequence to start off easy and become more taxing. What is less normal, says Philip Coyle—formerly the Pentagon's director of operational test and evaluation, now at the Centre for Defence Information—is for a weapons system to be deployed before undergoing more realistic trials. He reckons America's chances of shooting down an enemy missile next year, if peradventure it needed to, are “practically zero”. Others say the system will suffer the same fate as a previous limited one, deployed in North Dakota in 1975 and decommissioned as soon as it was introduced. The system's Pentagon masters admit the chances of success would depend on, among other things, how many incoming missiles there were, but are still “fairly confident” that it could do the job.

Given all this, Mr Bush's critics allege that politics, not science, is behind what they label a “rush to failure”. The General Accounting Office (GAO), a congressional watchdog, has hinted as much in successive reports: it commented pointedly that, though short-cutting testing norms “may help the MDA meet the president's deadline, it also increases the potential that some elements might not work as intended.” The GAO has also speculated that more haste now may equal less speed in deploying a viable system, and higher costs. Andrew Krepinevich of the Centre for Strategic and Budgetary Assessments, a military think-tank, argues that the MDA should be concentrating on research, rather than locking itself into a system that may prove obsolescent. The MDA insists that it tells Mr Bush what is feasible, and that

when he authorised deployment last December he was acting on its advice.

Shield or scarecrow?

Missile defence is certainly a cause as dear to Mr Bush's party as it is anathema to many Democrats. Many Republicans believe that the mere idea of “Star Wars” helped to defeat the Soviet Evil Empire. Just as passionately, many Democrats say the scheme is wasteful and misconceived. All their main candidates, except Joe Lieberman, say that money should be diverted to other things. Does politics or national security explain Mr Bush's hurry?

Both sides argue that the other is stuck in a cold-war mindset. Missile-defence sceptics say the enthusiasts have an over-developed, Reaganite fear of long-range missiles, which only a handful of countries are known to possess, none of them likely to attack America. (Short- and medium-range missiles are a different matter.) Nowadays, argue Democrats, the threat comes from terrorists: there are much cheaper, handier and less incriminating ways for weapons of mass destruction (WMD) to be despatched by al-Qaeda, or a rogue despot, than by ballistic missile—such as in a suitcase. The billions being handed to the MDA could be better spent on humbler things such as port security, and on countering WMD proliferation.

On the question of cost, the Democrats have a good case. The MDA will consume around $9 billion a year for the next five years: the first tranche was authorised last week. (Total defence spending will rise in that period from $400 billion a year to around $500 billion.) But the cost of actually deploying and operating the various systems on the MDA drawing board is unknown. A figure of $1 trillion was recently floated by one think-tank.

Supporters scoff at such guesstimates: Congress, they say, would never sign off on such a sum. One insider describes the MDA's budget as “perhaps the most scrutinised in the Department of Defence”. They maintain that America is already spending money on countering terrorism, and can afford the MDA's bill. Frank Gaffney, of the Centre for Security Policy, says that even a rudimentary defence against the missile threat “beats the hell out of nothing, which is what we have now.”

The enthusiasts say missile defence will help to dissuade some countries from developing missiles, and help deter any that consider firing them, by reducing the prospects of a successful strike. True, a mad dictator embroiled in an unwinnable war might dispatch his missiles anyway; but then, they might be stopped. And America's own freedom of action will be increased: it could, for instance, intervene in a regional conflict without fear of ballistic blackmail—though if its allies and overseas bases are not protected, which at first they won't be, it may still feel restricted.

The main argument in favour of missile defences, like the main argument against them, is that the world has changed. Deterrence, its supporters say, can no longer be relied upon as it was during the cold war: new and undeterrable risks have emerged. And America has already been caught on the hop by the pace of its adversaries' technological advances: in 1998, North Korea sent a missile sailing over Japan. Perhaps it will produce one able to strike America. Maybe a Taliban-style regime will emerge in a country that possesses such weapons.

On one point, at least, the advocates have been vindicated. America's plans required it to withdraw last year from the Anti-Ballistic Missile Treaty of 1972, under which both it and the Soviet Union had agreed not to build comprehensive defences against each other's missiles (though the abortive North Dakota system was permitted). Fears that this would start a new arms race with Russia and China have proved groundless—though that may change if the system expands to neutralise threats from those two countries.

Next year, the dream of perfect national defences in an imperfect world may finally seem within reach. Americans will at last have something to show for all the talk and money that have been expended on missile defence. They are unlikely to be much safer at first, though they may be when the system evolves. The realism and the costs of the dream will be keenly debated in the presidential campaign. Should the North Koreans or Iranians cause another tremor—or should terrorists hit mainland America again—those arguments will be voiced louder and sooner.

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Trade

Rolled over

Dec 4th 2003
From The Economist print edition

George Bush surrenders to Europe in the steel war

WHEN the Bush administration slapped tariffs on imported steel in March 2002, the move was sold as a temporary measure to help America's ailing steel companies get back on their feet. Job losses in the battered industry were concentrated in rustbelt states such as Ohio and West Virginia (which George Bush would love to win again in the 2004 elections) and Pennsylvania (which he hopes to snatch from the Democrats). Last month the World Trade Organisation ruled again that the tariffs were illegal.

On December 4th, a mere 20 months after imposing the tariffs, Mr Bush withdrew them. The president said his decision was based on his “strong belief” that America was “better off with a world that trades freely and a world that trades fairly.” It would be nice to think that a chastened Mr Bush had recovered his zeal for free trade. The truth is that the White House's electoral-college-vote-counters, led by Karl Rove, realised that a fight with Europe, as well as with the steel-making countries in Asia who stood ready to pile in, was not worth it.

The tariffs helped cut steel imports, but America's trade deficit with Europe has widened (see chart). More pressing, the European Union had given a mid-December deadline for America to give up the tariffs or face retaliatory duties of $2 billion.

The EU's strategy of retaliation was especially clever. It would slap new tariffs on Floridian oranges and a host of other American exports from Republican southern and western states. The last thing Mr Rove wanted was for textile workers in the Carolinas to start voting Democratic. Steel executives called the Europeans' threat “blackmail”, which it undoubtedly was.

Mr Bush prepared the way for a climbdown by visiting some of the states affected by his steel tariffs. On December 1st he travelled to Michigan, another key state in the 2004 election, which is more a user of steel than a producer. There the steel tariffs put up prices and are a burden on businesses such as the big car-makers. In Michigan, Mr Bush sang the virtues of America's rebounding economy.

That recovery should make removing the tariffs much easier. Mr Bush can point to strong results from a November purchasing-managers survey that shows manufacturing activity briskly rebounding. A booming economy in the third quarter, now revised up to 8.2% growth at an annual rate, helps as well. Unemployment has crept lower, blunting the impact of the nearly 3m job-losses that his Democratic rivals found so useful to mention in their stump speeches over the summer.

The next day, however, found Mr Bush in Pennsylvania, a steel-producing state with 21 electoral votes where the greeting was less friendly. The administration is trying to put a happy face on its decision, arguing that the work of the tariffs has already been achieved as the industry has been successfully restructured. Mr Bush also announced a new “import monitoring system” to spot unfair “surges” of foreign steel. Yet the steel industry is unhappy, and its unionised workforce will surely remember the betrayal.

How much damage will these disgruntled steelworkers do Mr Bush? Here the political calculations get complicated. Despite Mr Bush's present of the tariffs, the main steel union has already endorsed Dick Gephardt for the 2004 race. The Missouri congressman would certainly speak for rustbelt America, if he

won the nomination. But for the moment he is still trailing Howard Dean, and Mr Bush's people reckon they can portray the former governor of Vermont as an elite liberal out of touch with the rustbelt on a host of non-economic issues, such as gay marriage and the Iraq war. The same more or less goes for another north-easterner, John Kerry.

Even if Mr Bush's political calculations on steel prove correct, his problems with trade are far from over. Should he reach a separate peace in this tussle, there is another, bigger dispute with Europe over America's tax relief for exporters. The deadline for resolving it is New Year's Eve. Don't expect the White House's enthusiasm for free trade to last that long.

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Language and existentialism

Rumspeak

Dec 4th 2003
From The Economist print edition

Donald Rumsfeld speaks his mind with unusual clarity. Give him an award

AP

Wisely unknowing

IT PROBABLY troubles him little, but among those who loathe the Bush administration around the world, Donald Rumsfeld is a hate-figure rivalled only by George Bush. And as with the president, a favourite line of attack is his abuse of the English language. Jacob Weisberg, a leftish American journalist, has compiled a couple of books of “Bushisms”, casting a patronising look at the everyday verbal glitches of a homespun Texan. More recently “Pieces of Intelligence: the Existential Poetry of Donald H. Rumsfeld”, by Hart Seely, mockingly recasts in blank verse some of the defence secretary's turns of phrase.

Now the Plain English Campaign, a British group that lobbies for clearer use of language, has given Mr Rumsfeld the “Foot in Mouth Award” for the most baffling comment by a public figure. It was:

> there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.

Sorry, but what is so muddled about that? Certainly, it compares favourably with the prize-winning burble of previous years. Of her aptly named film “Clueless”, Alicia Silverstone, a film star, said “I think it was deep in the way that it was very light. I think lightness has to come from a very deep place if it's true lightness.” Dan Quayle, a future vice-president, once mused: “We offer the party as a big tent. How we do that, with the platform, the preamble to the platform or whatnot, that remains to be seen. But that message will have to be articulated with great clarity.” Or consider Bill Clinton's existential remark (which, alas, never received an award) when he was under questioning about Monica Lewinsky: “It depends on what the meaning of the word ‘is’ is.”

By contrast, Mr Rumsfeld is a model of clarity and wisdom. The nature of ignorance is a serious philosophical problem; for decision-makers, it is a knotty practical one. For a senior politician to grapple with serious epistemological questions, and to do so publicly, is as commendable as it is rare.

Indeed, no less than the London *Guardian*, normally known for its withering disdain for those ghastly rednecks across the Atlantic, fired a salvo in his defence. Far from being foolish, it argued, the offending

remark was “a complex, almost Kantian, thought”, admirably free of jargon and gobbledegook.

Well said. Not that Mr Rumsfeld, sensible fellow, is likely to care.

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Liberal angst in California

Home, sweet home

Dec 4th 2003 | SAN FRANCISCO AND SANTA MONICA
From The Economist print edition

San Francisco's mayoral election focuses on the plight of the homeless

THE dining-room sign proclaims: “All entrées served with fruit, vegetable, beverage and dessert”; hands go up for second helpings of beef lasagne; and on the street outside the queue of San Francisco's homeless and hungry stretches round the block. Clearly the St Anthony Foundation, a 53-year-old charity based in the central Tenderloin district, is meeting a need.

Just how to deal with that need could be the issue that determines who, on December 9th, is elected the city's new mayor. Not so long ago, the Democrats' Gavin Newsom—a well-connected entrepreneur backed by the outgoing mayor, Willie Brown—was a clear favourite. Now he is neck-and-neck with Matt Gonzalez, a “progressive” Green who has derided Mr Newsom's promotion of a homeless initiative known as Care Not Cash for betraying the values of America's most leftish big city.

Home truths by the Bay

Mr Newsom's idea is to provide better services for the homeless, but in return to cut the county's cash grant (now a rarity in California) made available to any indigent adult from a maximum of $395 a month to a mere $59. In November last year some 59% of the voters backed the initiative—but it was then put on hold by the courts, which ruled that only San Francisco's board of supervisors, not the voters, could make such a change. So far the board, which includes both mayoral candidates, has failed to agree.

Mr Gonzalez remains unconvinced. “We have great values, the value of diversity, great working-class values,” he proclaimed in a TV debate on December 2nd. “The next mayor will have the challenge of protecting those values in the face of hard economic times.'' Mr Newsom insisted: “We're not helping anyone by stepping over people on a sidewalk.”

The city's homeless problem is certainly growing. The number of people getting their meals at St Anthony's doubled between 1995 and 2002. Critics blame the city's generosity: just as motorways attract cars, so free food, medical services and emergency shelters will attract the “hard core” homeless from around the country. A quarter of St Anthony's “dining-room guests” have been in San Francisco for less than a year, and another 22% for less than five years.

Superficially, the statistics are less damning than you might expect. Of the 800,000 people reckoned by the Urban Institute to be homeless on any one day in America, more than 71,000 are thought to be in the Bay Area, and of these 7,000 live on the streets of San Francisco. But local counters think their city's figure could be twice that amount. Also, many of those on the streets in San Francisco are the “chronic” homeless—people, many of them mentally ill, who never find a job or a roof of their own. Whatever the true figures, it is hard to think of any other city where beggars are as obtrusive.

Despite the success of Mr Gonzalez's barbs about Mr Newsom's illiberalism, the Care Not Cash initiative talks of creating 1,000 new housing units, 283 new “slots” for residential drug treatment and 332 for detoxification procedures, plus a group of roving counsellors and nurses. Only if such facilities could not be provided, would a homeless person receive the kind of cash grant he gets at the moment.

This seems fairly meek stuff compared with what other cities might do. Besides cutting the cash payments, more conservative places would surely have tougher vagrancy laws—and enforce them

properly. In San Francisco, it is not a crime to sleep in a park during the day (though it is during the night), nor to drink alcohol in the park (though it would be in the street). “Aggressive panhandling” is now supposedly illegal in the city but asking for spare change is not. Urinating and defecating in public is illegal, too, but the police say it is hard to catch the “criminal” in the act.

Killing with kindness?

It is hard to imagine Rudy Giuliani accepting that excuse. The New York's mayor's policy of “zero tolerance” for petty crimes, which helped reduce the number of visible homeless in his city, has been copied in other cities. However, San Franciscans would never accept this.

This is not just effete liberalism, according to the locals. Even the most draconian tactics could not drive away San Francisco's temperate climate or guilt-ridden tourists—probably the main things that lure the homeless to the city. Both sides of the debate in the city maintain that the answer to homelessness lies in more government help to treat problems like alcoholism, drug addiction and mental illness that keep homeless people on the streets.

At the bottom of the city's homeless challenge sit two relatively unideological problems. The first is the housing market. For homeless people in the Bay Area, the difficulty is less not having a home as the slim prospect of ever getting one. The dot.com decade of the 1990s pushed house prices to stratospheric heights. A “single-room occupancy unit”, jargon for a tiny room in a dingy hotel with no cooking facilities and no private bathroom, could be rented for just $250 a month in 1995; now it can cost as much as $800.

The second is the hard core of chronic homeless who show no sign of being cured by any policy. Welfare-to-work schemes have little impact on people who cannot hold down jobs. Witness Harold, a 52-year-old derelict whiling away his day on San Francisco's Market Street after a night in a shelter: “I've been through programmes. Alcohol is my problem.”

Ironically, by not slinging Harold in jail, the soft-hearted city is actually saving money. Keeping an alcoholic derelict in jail costs $88 a day; St Anthony's can provide housing and rehabilitation for just $38. Whoever wins next week—and the latest poll gives Mr Gonzalez a slight lead—Harold reckons he will still be on the street: “If I had my choice, I'd rather sleep rough. If you're in a group, you're OK.”

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Lexington

Clinton's children

Dec 4th 2003
From The Economist print edition

The future of the Democrats may lie in the mid-west

IT IS the fate of angry political parties, no less than angry people, to look everywhere but the obvious place for the answer to their woes. Consumed by Bush-hatred, rank-and-file Democrats are flocking to the standard of the mad-as-hell Howard Dean. Meanwhile, in Washington, the Democratic commanders bicker over which establishment candidate to back as the “Anyone but Dean” alternative. Surely John Kerry will reassert himself eventually? Perhaps John Edwards isn't really too wet behind the ears? Maybe Dick Gephardt really has reinvented himself? Sooner or later Hillary Clinton is mentioned—and then misery sets in again.

This sense of failure is compounded by America's political geography. The new electoral college, adjusted to reflect America's continuing drift towards the west and the South, would have given Mr Bush an extra seven votes in 2000. From a Democratic point of view, the South seems beyond saving. The Republicans have just picked up two more governorships there. Mr Dean is already in trouble for saying he wanted the votes of people with Confederate flags in their pick-ups. Even if the party turned to a southerner, such as Senator Edwards or General Wesley Clark, it probably won't help that much: in 2000 Al Gore failed to win even his native Tennessee. Meanwhile, in the west, Mr Bush is on the offensive in New Mexico and Oregon, both narrowly claimed by Mr Gore in 2000. Even California, that great Democratic redoubt, has just been Schwarzeneggered.

Amidst all this gnashing of teeth, the Democratic high command may have missed a trick right under its nose: the encouraging things that are happening in the mid-west. This slice of the heartland is familiar territory to any Democrat with national ambitions, since its factories, farms and suburbs are where presidential elections tend to be decided. It is also an area where an interesting group of moderate baby-boomer Democrats now controls many of the governorships.

The newcomers include Jennifer Granholm (who won the governorship of Michigan in 2002), Rod Blagojevich (Illinois, 2002), Jim Doyle (Wisconsin, 2002), Kathleen Sebelius (Kansas, 2002), Bob Holden (Missouri, 2000), Tom Vilsack (Iowa, 1998) and Joe Kernan (who stepped up from lieutenant-governor of Indiana on the death of Frank O'Bannon, another moderate Democrat, earlier this year). So far they have kept a fairly low profile from a national perspective, though Mr Vilsack becomes chairman of the Democratic Governors' Association next year.

The hallmark of the mid-western Democrats is a virtue usually scorned in their party's primaries:

pragmatism. The mid-westerners have their liberal traits, but they have mostly steered a centrist course, building ties with local business, balancing state budgets and treading lightly on taxes. Part of this is born of necessity: American states are facing their worst budget deficits in decades, so there isn't much money to lavish on great projects. Yet something else is at work.

The new governors cut their political teeth during Bill Clinton's time in the White House. Mostly modernising “New Democrats”, they saw their champion swing first to the left—supporting “gays in the military”, failing to pass health-care reform and being trounced in the mid-term elections of 1994. But once Mr Clinton moved back to the centre, he won re-election easily in 1996. For many of Mr Dean's supporters, Mr Clinton's centrism was a betrayal. Not in the mid-west: he scooped up 100 electoral college votes from the region in both 1992 and 1996.

When these governors ran for office, they sold themselves as chief-executive types who would run the states in a more up-to-date way than older Republicans would. Mr Doyle and Ms Granholm, both former attorneys-general, have focused on modern styles of crime, such as terrorism and internet scams. Messrs Vilsack and Kernan are in the business of economic transformation, trying to push rural economies towards biotechnology.

It is easy to explain part of their success as good timing. The Democratic newcomers were lucky that several established Republican governors, including Tommy Thompson in Wisconsin and John Engler in Michigan (both engaging centrists), stepped down. A few of the new Clintonians have had a bumpy ride: Messrs Vilsack, Doyle and Blagojevich are all stuck in rows with their legislatures. And it is hard to draw broad lessons from local races often fought on local issues. “The closer you get to home,” admits Mr Kernan, “the less philosophical people become.”

Nevertheless, Clintonism suits the region. The number of independent voters has increased. The population is also relatively old, so health care, hitherto a Democratic subject, has been an important issue. Culturally, gay marriage is not popular, but neither is “southern” intolerance. Ms Granholm mentions both her Catholicism and her opposition to banning abortion.

Running by Bill's book

These Democratic governors may make a difference next year. Support from a popular local governor may add a point to a presidential campaign, and the mid-west is home to plenty of crucial swing states. Kansas and Indiana still look safe for the Republicans, but Mr Bush has to defend Ohio and Missouri; and he would sorely love to capture Michigan, Iowa, Wisconsin and Minnesota.

However, the real significance of the mid-western governors may come after the next election. Imagine that the furious Democrats pick the angry Mr Dean and he is shot down in flames by Mr Bush. This time next year, the Democrats might do worse than look to this group for their next set of leaders. More important, the Democrats should look hard at the sort of politics that works well in the region. Mr Clinton was a southerner, but the mid-west was where he won the presidency. And it is where his legacy is being most respected.

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Argentina's economy

Crawling back to daylight

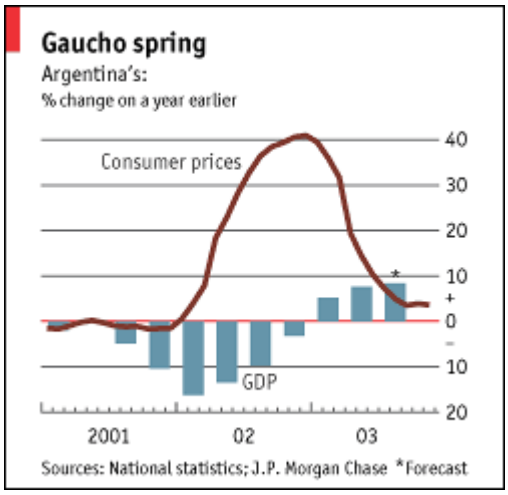
Dec 4th 2003 | BUENOS AIRES
From The Economist print edition

A surprisingly vigorous recovery, but confidence is still missing

Get article background

AS THE southern summer begins, Argentina's economy is showing signs of life after the battering it received in 2001-02. Shops are looking forward to their best Christmas in three years and tourism is booming. Even in the less glamorous neighbourhoods of Buenos Aires long-shuttered businesses are starting to re-open. Out in the pampas, farmers are buying new tractors and trucks, and market towns are buzzing with life.

For Roberto Lavagna, the economy minister, this is vindication. When he took the job, in April 2002, the economy was floundering, apparently at risk of hyperinflation, after a disorderly devaluation in a dollarised society, the largest debt default in history, and a deep depression. A year ago, the consensus on Wall Street was that the economy would grow a mere 2% this year while inflation would run at 20-25%. In fact, inflation is likely to end the year at 3% and GDP to expand by 7% (see chart). Next year's outlook is similar. The problems may come later.



Three things have helped the appearance of recovery along. One is simply the depth of the hole into which the economy fell. Even if growth continues at its current brisk rate, GDP will not return to its 1998 level until 2005. Unemployment is down from its peak of 21.5% last year, but is still at 15.6%. One Argentine in two now lives in poverty. Every week, militant groups of unemployed stage street protests.

Second, macroeconomic policy has been more effective than critics admit. Booming tax revenues have enabled the government to hit fiscal targets agreed with the IMF in September, though these do not allow Argentina to resume servicing most of its debts. Monetary policy has provided enough liquidity while keeping inflation at bay. Devaluation, plus the adoption of a floating exchange rate, combined with strong world demand, have stimulated exports.

Third, the government has focused on boosting domestic consumption at the expense of the demands of foreign creditors, banks, and privatised utilities. This is controversial, but has arguably made economic sense.

It has certainly made political sense for President Néstor Kirchner. Elected in April with only 22% of the vote, he has concentrated on wooing the general public. That paid off in a batch of local and congressional elections completed last month. The ruling Peronist party now holds 16 out of 24 provincial governorships, and another two are held by allies of Mr Kirchner. The party has also won a majority in both houses of Congress, though only a minority of its representatives there give the president their automatic loyalty.

When the new Congress starts work next week, the government will have less excuse for putting off some unpopular decisions. Until now, the recovery has been driven by cash and consumption (though a trickle of new investment has begun). It has relied on the "output gap" (ie, the extra amount that can be produced by bringing idle machinery and labour back into play), which probably still stands at around 10-15% of GDP. Once that is closed, growth prospects depend on new investment.

The government's critics argue that sustaining growth requires structural reforms and mending relations with international financial markets. The most urgent decisions include allowing privatised utilities to increase tariffs, frozen since January 2002, and reforming the finances of provincial governments. The trickiest issue is how much money to set aside for creditors rather than pump back into the local economy in social provision. The government insists that it can manage a primary fiscal surplus (ie, before debt interest payments) of no more than 2.4% of GDP this year, rising to 3% in 2004. That would not go far towards servicing a towering public debt of $185 billion, or 143% of GDP (see table).

With prodding from the United States and others, the IMF and other multilateral lenders have agreed to roll over Argentina's debts for up to three years. The government insists that it will honour "guaranteed loans" and newly-issued bonds (known as Bodens) which make up more than 50% of the assets of the local banks. But talks with other private creditors have barely begun. In September, the government made an offer that involved writing down 75% of the value of the defaulted debt, refusing to pay interest arrears and issuing new low-interest bonds. Since that would have amounted to a cut of up to 90% in the net present value of the bonds, creditors dismissed it as derisory.

Past-due burden

Argentina's public debt stock
end 2003, $bn, estimate

Debt to be restructured	Principal value	Interest in arrears	Total
Bonds	81.2	18.2	99.4
Other	6.8	0.5	7.4
Debt excluded from restructuring			
Guaranteed loans and bonds	24.6	-	24.6
Bodens	20.6	-	20.6
Multilaterals	30.8	-	30.8
Others	2.5	-	2.5
Total	**166.5**	**18.7**	**185.2**

Source: Ministry of Economy

On December 3rd, the Argentine Bondholders' Committee, a New York-based group, made a counter-offer. This would accept a write-off of 35% in the nominal value of the defaulted debt, but Argentina would have to honour overdue interest. Abigail McKenna, who sits on the committee, says the government could service this by increasing its fiscal surplus to around 3.5% of GDP and raising fresh money in the international markets.

Though agreement is not impossible, it is not likely to be swift. Some Argentine economists argue that the government should anyway be looking elsewhere for new investment, rather than tapping the international markets again. Argentines are thought to hold at least $100 billion abroad, and perhaps another $20 billion at home under the mattress. To coax that money back, the government needs to set out clear rules and incentives for investment, and reform the tax system, according to Aldo Ferrer, an economist at the University of Buenos Aires.

One hopeful sign is that bank deposits are rising again. But the banks will not resume lending until they are surer that they can trust the government and its paper. To break this stalemate, the central bank has issued new rules under which banks can write off their losses from the devaluation over five years, but which also oblige them to recapitalise, or close.

"We don't have money. All we have is time," says Alfonso Prat-Gay, the central bank's governor. "It's all about the right balance between caring about the past and caring about the future." That goes for the economy as a whole. Mr Kirchner rants about the foreigners who made a fortune from Argentine debt and are now driving a hard bargain with a broken country. But to sustain the recovery, the president needs to make investors confident enough to put their money to work in Argentina. Sooner or later, that will require settling the unfinished business of the past.

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Mexico's opposition

The lady vanishes

Dec 4th 2003 | MEXICO CITY
From The Economist print edition

Uproar in the former ruling party is bad news for Vicente Fox

IN THE old days, during the 70 years when it governed Mexico, the rules of power and policymaking were simple for the Institutional Revolutionary Party (PRI). The party was consulted, but the president made the decisions. Those days came to an end with defeat at the hands of Vicente Fox in a presidential election in 2000. Now adrift in the uncertain world of opposition, a power struggle within the PRI has burst into a public brawl. Ironically, this is bad news for Mr Fox and his hopes of reform.

The PRI's brawl arose from a rash attempt by Mr Fox to revive a proposal to levy VAT on items that are currently exempt, such as food and medicine. Two years ago, a similar proposal was defeated in Congress, where Mr Fox lacks a majority and the PRI remains the largest party. This time, the government hoped to sneak the measure through as part of the 2004 budget. To do so, it was relying on the political skills of Elba Esther Gordillo, the PRI's new leader in the lower house of Congress and a pragmatist who gets on well with Mr Fox.

But Ms Gordillo, the former leader of the teachers' union, ended up provoking a mutiny. The PRI had campaigned against VAT on food in a mid-term congressional election in July. So Ms Gordillo came up with an alternative plan, involving a tax on the production of food and medicine. Her efforts to bully the party into backing this failed when Roberto Madrazo, the party president, withdrew his initial support. Thus encouraged, just over half of the 222 PRI deputies in the lower house voted to strip Ms Gordillo of her job. In her place, on December 4th this faction chose Emilio Chuayffet, a party veteran. Ms Gordillo is now threatening legal action.

On one reading, the PRI's modernising, technocratic wing has lost out to its reactionary “dinosaurs”. What now? The party is split into two rival camps. The breach is unlikely to become permanent: the PRI is united only by a belief in unity. But Ms Gordillo's ejection almost certainly dooms Mr Fox's hopes of reforming the constitution to allow private investment in electricity and oil, and to modernise an archaic labour code. Such reforms are vital to shake off three years of economic stagnation. Not coincidentally, the peso slumped by 4% against the dollar (itself sickly) in the three weeks to November 28th.

Mr Fox presides over a disjointed government and bears much of the blame for this paralysis. Last week, just when the finance minister was asking legislators to support the VAT measure, the interior minister told reporters that the government would come up with an alternative plan. It may have been a mistake to seek the tax change without having secured electricity reform first. As he reached the mid-point of his six-year term this week, Mr Fox remains personally popular. But he has little to show for his presidency so far.

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Venezuela's president

Signed but not sealed

Dec 4th 2003 | CARACAS
From The Economist print edition

A vote on Hugo Chávez comes closer

Get article background

THERE were those, on both sides, who thought it would never come. But last weekend Venezuelans finally got the opportunity to sign an officially-recognised petition for a recall referendum against Hugo Chávez, their controversial leftist president. Millions of them seized it. According to the Democratic Co-ordinator, an opposition umbrella group, some 3.6m signed the petition—well above the 2.4m required by the constitution to trigger the referendum. If so, Mr Chávez faces a real threat that his presidency could soon be brought to a premature end.

AFP

Just go, say the petitioners

He certainly seems worried enough to be taking evasive action. On day three of the four-day signature drive, he called on his supporters to take to the streets to prevent what he called a “mega-fraud”. Fortunately, his call went largely unheeded, and the exercise passed off with only minor incidents. Foreign observers, headed by César Gaviria of the Organisation of American States, were satisfied that the process was properly conducted.

In a bitterly divided country, government and opposition representatives at the signing centres managed to resolve their disputes amicably, shaking hands and even sharing food. Whatever they think about their president after five turbulent years of his rule, most Venezuelans seem now to be united by a desire to settle their differences in a peaceful and constitutional way.

That marks a welcome change. In its desperation to get rid of a president whom it sees as an authoritarian populist who is destroying the country, the opposition last year allowed itself to be provoked into trying some short-cuts. It paralysed the country's vital oil industry with a two-month general strike, and even succeeded in briefly ousting the president.

After protracted talks, chaired by Mr Gaviria, both sides agreed to respect the 1999 constitution, itself the brainchild of Mr Chávez. In an innovation which he once championed but now seems to regret, this allows for a recall referendum, once an elected official has served half his term, and provided that 20% of the electorate requests one.

But the game is far from over. The electoral authority now has 30 days to determine the validity of each

signature. The tight regulations which governed the whole process—the petition forms were printed on bank security paper, for example—makes it unlikely that many signatures will be disqualified. If all goes smoothly, the referendum would probably be held in April.

But the government will be looking for any excuse to impugn the process, using its leverage over the electoral authority and the courts. Some in the opposition have long argued that Mr Chávez will not leave without a fight. The president, a former army officer, has said he sees politics as a branch of warfare. Unless the country's institutions, including the armed forces, stand squarely behind the constitution, the president may yet evade an early date with the voters. The consequences for Venezuela would be dire.

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Chile and Bolivia

The inalienable right to a beach

Dec 4th 2003 | LA PAZ AND SANTIAGO
From The Economist print edition

A territorial row that refuses to die

AMID all his “revolutionary” bombast, Venezuela's president, Hugo Chávez, occasionally delivers undiplomatic home truths. So it was last month, when he spoke of his dream of “swimming on a Bolivian beach” on the Pacific. That provoked Chile, which deprived Bolivia of its coastline in the War of the Pacific of 1879-83, to recall its ambassador in Caracas. It also highlighted one of South America's most stubborn territorial grievances.

Not dispute—for Chile insists that there is none. A 1904 treaty, ratified by the Congresses of both countries, legalised its annexation of Bolivia's nitrate-rich coastal province of Antofagasta. Chile also grabbed Arica and Iquique from Peru. But in Bolivia, the loss still rankles. In 1978, it broke diplomatic relations over the issue (they have been restored, but not fully).

Each year, Bolivia's presidents mark the “Day of the Sea”, often with a vow to recover a Pacific port. The landlocked navy has not been disbanded; it chugs forlornly around Lake Titicaca. Maps in barracks, and in the offices of some politicians, still show Bolivia's pre-1879 boundaries. Schoolchildren learn that they have an inalienable right to a coast.

A Bolivian history of the world

More seriously, modern economic research suggests that being landlocked is a development handicap. Bolivia's foreign ministry claims that this has docked 1% a year in GDP growth. And revanchist nationalism played a big role in the overthrow in October of President Gonzalo Sánchez de Lozada, who had championed a scheme to export natural gas. The cheapest way is through a Chilean port.

Chilean officials retort that they have already granted Bolivia access to the sea, in the form of guaranteed tariff-free use of Arica and Antofagasta, where it operates its own customs service and warehouses. They say that the two countries were close to sealing a free-trade agreement recently, until Bolivia had second thoughts. The government's stance is in line with public opinion. According to one recent poll, only 14% would countenance ceding sovereignty over any ports. Chileans point out that wars shifted many South American borders in the past two centuries.

Fair enough. But given how much fine talk Latin American presidents devote to regional unity, Chile's position seems a touch anachronistic. Its northern coastline consists of empty deserts and a few quiet ports. Could it not share sovereignty over a little-used harbour, and an adjoining beach, allowing the Bolivian flag to flutter beside the Pacific, along with Chile's?

The benefits would be mutual. Such a gesture would help get Bolivia's gas out of the ground. This could fuel Chile's northern copper mines and, perhaps, a petrochemical industry. Instead of glowering at one another, the Chilean and Bolivian armies could stage joint patrols against drug traffickers. Bolivian diplomats have long failed to interest outside bodies in this dispute. But last month Kofi Annan, the UN secretary general, while visiting Bolivia, offered to help the two sides talk. Perhaps he was poorly briefed—or perhaps he was being farsighted.

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Australia

A fair dinkum Labor hero

Dec 4th 2003 | SYDNEY
From The Economist print edition

Newspix

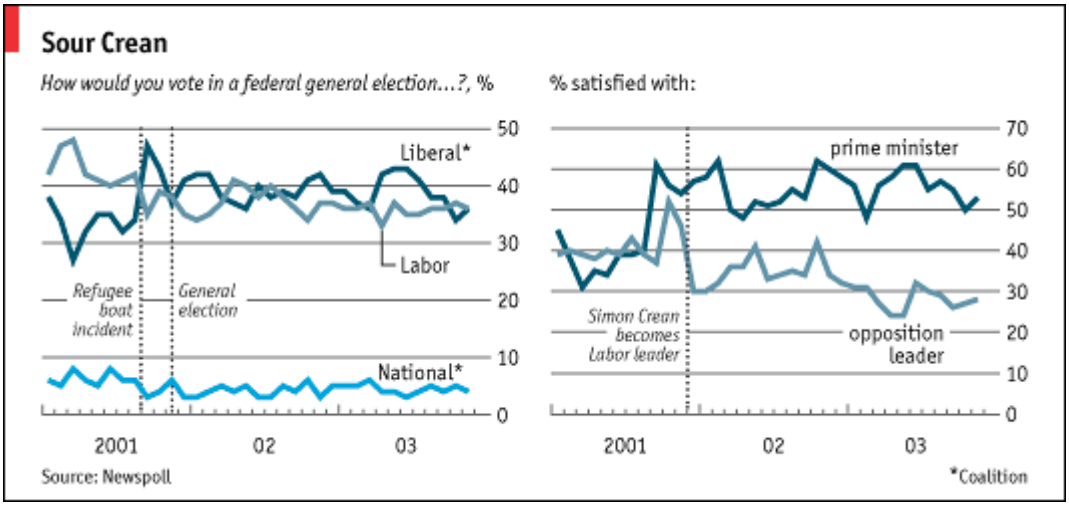
Can Mark Latham turn the political tide?

Get article background

BEFORE he became leader of Australia's opposition Labor Party, most Australians knew Mark Latham for two things: his language and his fists. He once called John Howard, the prime minister, an “arse licker” over his strong support for George Bush and the Iraq war, and Mr Bush himself “the most incompetent and dangerous president in living memory”. Then there was the time Mr Latham tackled a taxi driver and left him with a broken arm. But faced with an election by the end of 2004—and the prospect of Mr Howard winning a fourth term—Labor parliamentarians decided to ignore Mr Latham's colourful past and on December 2nd elected him to replace the lacklustre Simon Crean.

Mr Crean stood down after Labor powerbrokers, dismayed at his collapsing public-approval ratings, told him his time was up. Many had expected the party to replace him with Kim Beazley, his predecessor, a more popular figure despite having lost two elections to Mr Howard. In choosing the mercurial Mr Latham over Mr Beazley, Labor has signalled a break with its past and embarked on possibly the most daring, or dangerous, experiment in its recent history. At 42, and in parliament for less than a decade, Mr Latham is Labor's youngest leader in a century. Yet he also seems to be the party's best hope for overcoming the identity crisis that has plagued it since it lost power to Mr Howard's coalition almost eight years ago.

Under Mr Latham's two predecessors, Labor seemed paralysed in dealing with Mr Howard's political success, forged on the back of a robust economy and issues of national security and “border protection”. Ironically, Australia's strong economic growth during the Howard years has been built in part on the Labor government's deregulation policies in the 1980s.



Low inflation and a lengthy run of low interest rates have since then made Australians feel more prosperous than ever. But they have also produced a debt binge that has fuelled an overheated housing market. On December 3rd the central bank raised interest rates for the second consecutive month. Some analysts predict a third rise in early 2004. As he goes into an election year, this could cause problems for Mr Howard if financially squeezed mortgagees decide to turn on his government.

Many of them live in areas such as outer suburban Sydney and south-east Queensland, where the election will be won or lost. Mr Howard has captured these former Labor heartlands in the last two elections largely by appealing to voters' most conservative and populist instincts. Ditching the former Labor government's focus on reconciliation with aborigines, an Australian republic and closer ties with Asia, Mr Howard has concentrated instead on a tough stand against asylum seekers and making Australia's alliance with America the cornerstone of its foreign policy.

In the conservative Liberal Party, Mr Howard's authority appears paramount. He buried suggestions that he might stand down after he turned 64 last July and now seems determined to lead the party for the foreseeable future. In a new book, “What's Wrong with the Liberal Party?”, Greg Barns argues that under Mr Howard the party has radically changed the pattern of political loyalty in Australia by capturing voters in Labor territory and “keeping them chronically insecure about social and national change.” Mr Barns's own experience reflects an intolerance of dissent that Mr Howard has imposed on the party. He was dumped by the Liberals as a candidate in a state election in Tasmania last year after he had publicly criticised the Howard government's policy of incarcerating asylum seekers.

Can Mr Latham break the Howard government's grip on Australia's political landscape? The *Sydney Morning Herald* greeted Mr Latham's leadership as “the remaking of politics”. Gough Whitlam, a former Labor prime minister, has long marked out Mr Latham as a future prime minister. Few political ascensions have provoked such a buzz of expectation.

Mr Latham is a creature of the old Labor suburban heartland that Mr Howard has captured, and is unbeholden to either of Labor's old left or right factions, whose feuds have often shackled its policies. He is a champion of the market and individual enterprise and favours tax cuts for high earners. The job of government, he says, is “to help the people who are doing the right thing—the people who are getting stuck in, doing things the fair dinkum Australian way.” He will push his ideas to make Australia an “upwardly mobile society”, and boost health and education, where the Howard government is vulnerable.

His biggest challenge will be to unite his party behind him before the election, whose timing is up to Mr Howard. The government coalition will try to exploit Mr Latham's inexperience and his inconsistencies on economic policy. But the new Labor leader is as formidable a communicator as Mr Howard, and every bit as adept at responding quickly to circumstances. As for those foul-mouthed insults, he already says he's a changed man: “I love the Australian language, the larrikin [rowdy] Australian style. But no more crudity.”

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China and America

Mr Wen goes to Washington

Dec 4th 2003 | BEIJING
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New-style leader, old-style conflicts

Get article background

THE prime minister of China, Wen Jiabao, is the sort of man with whom President George Bush ought to feel comfortable doing business. This is just as well. Mr Wen's visit to America next week, his first since assuming the premiership in March, comes at a delicate time. A quarrel over trade, new tensions across the Taiwan Strait and a nuclear confrontation on the Korean peninsula will give the two leaders plenty to talk about.

According to Communist Party protocol Mr Wen is China's number three. In reality he comes a close second after President Hu Jintao. Since getting their respective jobs, both have been trying to remould the image of Chinese leaders. At home they are wooing the poor and marginalised. Abroad, they are trying to appear more engaged in resolving the world's problems. On December 1st, World AIDS Day, the new style was in evidence. Chinese television news showed Mr Wen wearing a red ribbon, the international symbol of solidarity with AIDS victims, and shaking hands with AIDS patients. Chinese leaders had previously taken a diffident approach to the disease.

This makeover, and Mr Wen's amenable disposition, could help to ease relations with an America facing an election in which its $120 billion trade deficit with China will be a sensitive issue. In November America announced that it would impose quotas on Chinese bras, dressing gowns and knitted fabrics to protect itself from what it said was a surge of such products on its market. A week later the Americans declared that television sets made by four Chinese companies were flooding in too, and that—pending an investigation due to finish in April—they would face punitive tariffs. China denied that it was violating any trade rules.

Although these moves affect only a tiny proportion of China's trade with the superpower, the Chinese fear that worse is to follow. They worry that a president seeking re-election might be tempted to hit out at China's exports to pacify those who accuse China of destroying American jobs by selling products made artificially cheap by a deliberately undervalued currency. Mr Wen said he was "shocked" by America's protectionist measures. But China has so far responded mildly to America's sabre-rattling on trade. A commentary this week in the party's mouthpiece, the *People's Daily*, said China should not respond "emotionally" to trade disputes lest there be "negative reactions" that cause the country even more harm.

In Washington, Mr Wen is expected to stick to China's line that a big readjustment of its exchange rate, or removal of the currency's peg with the dollar, could destabilise its economy. Mr Bush knows that the Chinese have a point on this, but will at least want assurances that China will do more to keep the market-opening promises it made when it joined the World Trade Organisation two years ago. On that issue, it is Mr Bush who has a point.

Mr Wen will also want to discuss Taiwan. The Chinese have expressed "deep concern" about the passage of a referendum bill last week by Taiwan's parliament. Taiwan's president, Chen Shui-bian, has suggested that China's missile build-up on the coast facing the island warrants a referendum on unspecified "national security issues" at the same time as a presidential election next March. China fears

this could be a step towards the island's declaring formal independence from the mainland. It believes that Mr Chen has been emboldened by the Bush administration's arms sales to Taiwan. Mr Wen told the *Washington Post* last month that China would “pay any price” to prevent Taiwan's legal separation from the mainland.

As it happens, the Americans are also worried that Mr Chen might be going too far. A State Department spokesman said this week that America opposed any referendum designed to change Taiwan's status. The last thing America wants, as it struggles with Iraq and North Korea, is being dragged into a conflict between China and Taiwan. Meanwhile, in a departure from its past insouciance, China is now actively trying to broker a settlement of the North Korean nuclear crisis. For that at least, Mr Wen will get a pat on the back.

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South Korea

The black and blue house

Dec 4th 2003 | SEOUL
From The Economist print edition

The politics of nastiness may continue through April's elections

EPA

The embattled Mr Roh

THE only members of South Korea's government who seem busy these days are the prosecutors. They have dragged in a steady stream of business executives and political operatives for questioning about everything from abused shareholders to campaign slush funds. Three of those they have investigated are former aides of the president, Roh Moo-hyun. The majority Grand National Party (GNP), which opposes Mr Roh, has tried to turn all this to its advantage, calling for a special prosecutor to investigate the president himself. When the presidential Blue House vetoed such a bill last week, the GNP reacted by boycotting parliament. So with the current session due officially to end on December 9th and fresh assembly elections scheduled for April 2004, bills dealing with issues ranging from next year's budget to troops for Iraq have been in limbo.

Although Mr Roh is fighting back—and is aided by a widespread public belief that the GNP is corrupt—his government is unlikely to accomplish much between now and April. Mr Roh not only lacks a majority in the assembly, but has been without any party at all since September, when his Millennium Democratic Party (MDP) split and he opted to go it alone. Nor can Mr Roh easily appeal directly to the public. He has been at loggerheads with South Korea's mass media, and especially its three conservative newspapers, for most of his ten months in office. A former labour lawyer, he has also fallen afoul of both organised labour and big business, by waffling in response to several crippling strikes.

Mr Roh's best hope of support, therefore, still rests with the millions of young voters who helped to elect him. But they, too, are now at risk of writing him off. One reason they backed Mr Roh—whose limited experience included a stint as fisheries minister and several failed campaigns for lower office—was that they preferred his idealistic message to the cynicism and influence-peddling of mainstream politicians. Many of these young voters believe that, whatever the truth behind the accusations against Mr Roh, most members of the assembly have been tainted by money politics. Yet by focusing public attention on corruption, the GNP seems to be gambling that it will do more damage to the new kid in town's reputation than to its own, already sullied, one.

How far will the president and his opponents go? Mr Roh has already dealt one big blow to stability, by calling in October for a referendum on his presidency, and saying that he would step down if he loses. The Constitutional Court said last week that it could not even rule on such a measure, since Mr Roh's proposal is still vague. Four of the nine justices, however, hinted that they would strike down such a referendum. Meanwhile, the GNP's chairman, Choe Byung-yul, launched a hunger strike last week to protest against the president's veto of the special prosecutor. And the new leader of the rump MDP, Chough Soon-hyung, said that he will help the GNP muster the two-thirds vote needed to override the veto.

Since histrionics have long been a staple of South Korean politics, the assembly may yet manage to do some work amidst all this bluster. On December 3rd, the GNP agreed to end its boycott, in time to override the veto on the corruption investigation bill and vote on the budget next week. The outlook for other bills, such as a domestic counter-terrorism law and a free-trade agreement with Chile, is less clear. So are the potential economic effects of all this gridlock. Although the economy has shown signs of recovering from a sharp slowdown in the first half of this year, it remains dependent on export growth. The bursting of a consumer-credit bubble is still holding back domestic spending.

Mr Roh will have to hope that the assembly's theatrics backfire. Then, instead of growing apathetic and enjoying a spring holiday, angry young voters might head to the polls on election day and back his candidates. For now, however, the grandstanding on both sides seems likely to continue.

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India's state elections

The temptations of victory

Dec 4th 2003 | DELHI
From The Economist print edition

Encouragement for India's ruling party to call an early general election

Get article background

LIKE his British counterpart, India's prime minister, Atal Behari Vajpayee, has the power to dissolve parliament when he thinks his party might win an election. On December 4th, he might well have been thinking just that. The results of four important state elections held on December 1st were a big boost for his Hindu-nationalist Bharatiya Janata Party (BJP), which leads India's governing coalition. But they were probably still not a convincing argument for bringing forward the national vote, which must be held by October next year.

The elections were all in states held by the Congress party, which is the main national opposition. It kept only one: Delhi itself, where the local administration is thanked for having brought a tangible improvement in citizens' lives, through cleaner air, better transport and less sporadic electricity.

Congress had already failed to win back another state, Mizoram, in the north-east, where elections were held on November 20th, from the former secessionists now in power. There, the swearing-in of the new assembly was delayed by violence on December 4th.

Local issues dominated all the campaigns. Except in a few areas, the BJP did not make much of “Hindu” issues, such as the campaign to build a temple to the god Ram in Ayodhya. The “anti-incumbency” factor that tends to handicap all ruling parties worked against Congress. In the biggest of the contests, in Madhya Pradesh, the BJP harped on basic infrastructure, still dismal after ten years of Congress rule, and won a landslide. In Rajasthan, where the state government is generally held to have coped well with a five-year drought that only ended with this summer's monsoon, the BJP also won comfortably, as in Chhattisgarh.

The BJP's best-ever performance in these three states in India's Hindi-speaking belt, where most general elections are decided, is a setback for Congress and its Italian-born leader, Sonia Gandhi. It will strengthen those voices in the BJP calling for early elections. National incumbency seems actually to have helped the party. Its spokesmen credit the current strength of India's economy, expected to grow by at least 7% this year. But the mood of national optimism is partly a consequence of the weather—an exceptionally good monsoon. So it could evaporate in a drought before next October.

Unlike Tony Blair, however, Mr Vajpayee cannot pick the date for an election. That is the job of a fiercely independent election commission, which has several months' leeway. That is one reason why Mr Vajpayee may be deterred from an early dissolution of parliament. Another is that he has unfinished business, both in organising his party for the electoral fray, and in securing his own legacy.

An enduring theme of his term in office has been a frustrating attempt to make peace with Pakistan. Twice before it has gone badly wrong, and last year even led to fears of all-out war between the two nuclear powers. His third peace effort is so far going better. This week it was announced that, after a two-year hiatus, the two countries will resume direct air links from January 1st. Further discussions on rail links are now to follow. Also in January, Mr Vajpayee will attend a regional summit in Islamabad, an opportunity for bilateral talks with Pakistan too. A lasting improvement in relations with Pakistan would ensure the patient Mr Vajpayee the place in history he seems to crave. It might also be a vote-winner.

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Thailand

Bookies and pimps

Dec 4th 2003 | BANGKOK
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Making them legal

IT DOES not take a genius to see that Thailand's current policy on gambling and prostitution is not working. Both businesses are supposedly illegal, but throw a stone in Bangkok, and the chances are you will hit a gambler or a brothel goer, if not a gambling den or brothel. There is a bewildering array of things to bet on—football matches, lottery numbers, card games, cockfights—and an even more exotic range of sexual services on offer. Whole neighbourhoods, such as the infamous Patpong, are given over to prostitution, while a helpful Bangkok newspaper recently listed the biggest underground casinos in each part of town. It does, however, take a self-confident politician to propose a more workable policy.

For starters, Buddhism, the religion of some 95% of Thais, frowns on both practices. What is more, politicians, policemen and other influential types are heavily invested in the current system, as both kingpins and customers. When police recently charged Chuwit Kamolvisit, the owner of six massage parlours, with running ill-disguised brothels, he angrily revealed the millions of dollars in bribes he had been paying to Bangkok's duplicitous officers to avoid just such an occurrence. He also threatened to disclose the identities of some of his more prominent customers. Gambling is just as awkward a subject. Thai politicians, for example, are said to own stakes in several of the casinos that have sprung up across Thailand's borders with Cambodia and Myanmar.

But few politicians are more self-confident than Thaksin Shinawatra, Thailand's prime minister. Mr Thaksin, a former tycoon better known for economic-policy gambles than for moral qualms, is considering legalising both gambling and prostitution. He has mused publicly about permitting bets on football matches and has pledged to hold a referendum next year on plans to build a Vegas-style casino in one of Thailand's poorer provinces. Meanwhile, the Justice Ministry held a seminar in late November to debate the pros and cons of legalising prostitution.

The government makes much the same arguments in favour of legalisation as its proponents elsewhere. It would reduce opportunities for corruption and free the police to concentrate on more serious crimes. It would allow individuals to decide the rights and wrongs of gambling and prostitution for themselves, instead of criminalising the habits of millions of otherwise law-abiding citizens. It might even provide some protection for abused punters and prostitutes.

The two businesses could also become tidy earners for the government if it managed to capture just a small fraction of their revenues through taxes or licensing fees. In the mid-1990s, a group of academics estimated that the turnover of Thailand's sex and gambling industries amounted to more than 10% of GDP. In 2001, another study valued illegal gambling alone at 320 billion baht ($8 billion) a year. Participants at the Justice Ministry's seminar thought the sex trade might rake in some 3% of GDP, or $4.3 billion, annually.

The opposition Democrat party has denounced such calculations as a typically Thaksinesque elevation of profit over principle. They point to article 73 of the constitution, which states that “The State shall patronise and protect Buddhism... as well as encourage the application of religious principles.” Academics have been quick to liken state-sponsored gambling to a regressive tax, which would raise money mainly from the poor. Prostitution is an even more fraught subject. But the biggest obstacles may be practical ones. Sceptics wonder whether the government really could turn Thailand's bookies and pimps into law-abiding taxpayers. And Mr Thaksin might not even get his proposals past parliament, unless he retracts a decision to drop from his Thai Rak Thai party those MPs who frequent brothels or keep mistresses.

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Afghanistan

Elvis lives, in Persian

Dec 4th 2003 | KABUL
From The Economist print edition

The life and death of the "Afghan Elvis"

AFTER the death in 1979 of Afghanistan's pop legend, Ahmed Zahir, Kabul police found hundreds of pairs of women's knickers in his house; or so claimed a gang of braggarts in Kabul's swollen main bazaar last week. Afghan women marked the three-day Muslim festival of *Eid* with a quieter tribute to a man known as the "Afghan Elvis". Young and old, in couples and alone, hundreds of them trudged out of the capital and up a dusty slope of the Kabul valley to pray at his newly rebuilt tomb.

Afghans revere the dead singer. The son of a prime minister who played for the poor, singing Persian love poetry to an electric guitar, Zahir represents for many Afghans the glory days of the 1960s and 1970s, when their country was at its most prosperous and whole. The music-loathing Taliban obliterated Zahir's tomb with rockets shortly after seizing Kabul in 1996. But even that did not deter Zahir's diehard fans. Setting course for an ancient mosque further up the slope, they would veer quickly off past the singer's grave, though few dared to pause long by its rubble.

Five months ago, a group of fans rebuilt the tomb, a small concrete dome on six spidery legs. Thousands have since visited it, to reflect, pray, or hum a favourite Zahir number. "I love you! I love you! I love you!" crooned one elderly man to your (male) correspondent.

A Pushtun, Zahir nonetheless sang mostly in Persian and appealed across Afghanistan's tribal divide. Legend has it that Zahir's father initially objected to the young Ahmed's calling, but blessed it after strolling with his son through Kabul. More commoners hailed the pop singer than the prime minister.

If Zahir's life mirrored his country's brightest fortunes, his death was a harbinger of the carnage to come. In 1979, a few months before Soviet troops invaded, Zahir was killed in a car crash believed to have been arranged by Hafizullah Amin, who was to become Afghanistan's president before getting killed himself. Today, Zahir's rebuilt tomb is disappointing in much the same way as Afghanistan's wider reconstruction effort. Though better than the heap of rubble that it replaced, the tomb was redone on the cheap: several marble tiles have already fallen off.

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Rags to riches

Can oil ever help the poor?

Dec 4th 2003 | KOMÉ
From The Economist print edition

AP

It hasn't in the past. Chad hopes to buck the trend

RURAL Chadians are unaccustomed to handling large amounts of cash. EssoChad, a consortium led by ExxonMobil, whose new oil pipeline runs through this giant but largely empty Saharan state, paid $4m to compensate those whose land had been spoiled for farming, including $1,000 for every mango tree cut down. The farmers squandered their windfall. One celebrated by taking a bath in beer. Another left his mud hut and went to stay in a four-star hotel in the capital, Ndjamena, for a couple of weeks. Others took several more wives. Some invested wisely in windmills or cattle, but most lost the lot. Traditional chiefs took a cut of about 10% from every farmer's compensation package.

This is the story of oil booms in poor countries, writ small. The world's most sought-after substance often curses the countries where it is found. Those that were rich before they struck oil, such as Norway, have not been harmed, and the most oil-rich Gulf states are obviously wealthier because of oil. But in many poor nations, a sudden influx of oil money has proven ruinous.

As with those farmers in Chad, easy money undermines the work ethic. Clever folk abandon productive work and start hustling for a share of the petrodollars. Governments are corrupted, like those Chadian chiefs, as it is easier to steal unearned wealth than the sort that people have worked for.

Paradoxically, unearned wealth tends to bust budgets. Everyone thinks the country is richer than it really is, so politicians spend a fortune on pointless prestige projects, and citizens clamour for handouts. This is how Nigeria got its artificial capital city, and how Saudi Arabia came to be saddled with more than 20,000 expensive princes. None of the extra spending is cut back during cyclical oil price slumps, so the lucky petro-states end up horribly in debt. Worst of all, oil fuels wars (in Sudan, for example), by making control of the state a prize lucrative enough to kill for.

Africa is on the verge of an unprecedented oil bonanza: a handful of states are expected to receive $200 billion in the next decade. To avert disaster, ways need to be found to ensure that the money is spent wisely. It is in Chad, Africa's newest oil-producer and one of its poorest, that the boldest experiment is taking place.

Over the past three years, EssoChad has transformed acres of farmland into a constellation of oil wells

and high-voltage power lines. Oil has started to flow through a 1,070km (665-mile) pipeline that links this landlocked desert state to the sea via Cameroon. Over the next 25 years Chad is expected to make $80m a year from oil, a 50% boost to its tiny budget. On November 26th, the government got the cheque for its first shipment of crude.

But the money comes with ethical strings attached. Under pressure from the World Bank, Chad has set up an independent watchdog that will scrutinise how the government spends its oil booty. The Revenue Oversight Committee, as it is known, has rejected more than half the government contracts it has screened, and is insisting on open bidding.

The committee has weaknesses: it is understaffed, with only four full-timers and just five days to size up each contract. Its scrutiny slows an already tedious and mostly manual process for disbursing funds. Arguably, Chad needs the money fast. Though nearly twice the size of Texas, it has only 550km of paved roads. Infrastructure has been ground down by three decades of civil war. Ndjamena's only power station could barely light five office buildings in Washington. But without transparency, the money will be wasted.

Oil is capital-intensive but not labour-intensive, so few of Chad's 9m people can benefit directly. At most, 3,500 were employed in building the pipeline and other facilities, and some complain that they had to bribe employment agents to be hired. With the oil now flowing, the Chadian workforce is down to just over 1,000.

Car dealers and private security firms have profited from the arrival of well-paid expatriates. So have traders, who have quadrupled prices for chicken, cocoa butter, fish and meat. A shanty town has sprung up outside Komé 5, the main oil plant, nicknamed “Atten”, after the French for “wait”, because people go there to wait for work. Some people have rebaptised it “Satan”, because of its plentiful bars and AIDS-spreading brothels.

The Chadians' best hope is that their watchdog will bite. Half its members have no ties to government, which is cheering. Already, it has been alerted to a discrepancy between the amount of oil pumped and the amount shipped. This is worrying, but the fact that such sensitive information has been made public augurs well.

Chad's case may be exceptional. Donors could lean on it because it was broke. As money starts flowing in from new oilfields, some of which will not fall under the probing eye of the committee, the government may feel empowered to ignore nagging foreigners. Do-gooding lobbies in Europe and America are campaigning for oil firms to “publish what they pay” to governments in poor countries, but the firms fear that if they insist on transparency, governments will simply switch to less scrupulous drillers. And even if they do open up, that may not stop politicians from looting. The only difference may be that people will know more accurately how much is stolen.

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Congo

An oasis of hope

Dec 4th 2003 | BUTEMBO
From The Economist print edition

A Congolese town that actually works

AFTER dark, the Kimbulu quarter of Butembo enjoys a rare luxury: light. Four years ago, some of this eastern Congolese town's more dynamic residents, tired of life without electricity, clubbed together to generate some. They scouted out a small creek flowing down a steep hill, and dammed it. With some 185 families all kicking in $10 a month to fund it, a turbine now lights up homes and powers a flour mill and welding equipment used to make doorframes and windows.

This little co-operative, Proleki, has spawned a larger imitator. Last year, 25 of Butembo's businessmen each chipped in $15,000 to form a joint venture with a South African engineering firm on a much larger river. Two new turbines are planned, and one will soon be working. Besides lighting more homes, the new venture will help make the local airport safer for landings. As Proleki's president, Mby me Nkumbi, boasts: “We're the model for the big guys.”

Butembo is hardly a paradise: it has neither tarred roads nor a reliable water system. But it is peaceful and orderly—no mean achievement in Congo. In the absence of anything resembling a normal city government, the town's businessmen have set one up themselves. No formal taxes are collected but local merchants are paying for a new mayor's office and for an extension of the city's Catholic college.

Most people in the region are from the Nande ethnic group, who have a strong commercial tradition. The Nande control much of the trade that flows between eastern Congo and Asia via the Kenyan port of Mombasa. Their reputation for honest dealing means that many firms selling consumer goods, such as clothes and washing powder as well as petrol, are happy to give them credit.

The people of Butembo used to have to defer to the crooked and predatory central government in distant Kinshasa, but since the war cut them off from the capital they have been free to take more decisions for themselves. “In many ways, the war was terrible,” says Eric Paluku, the town's former mayor. “In other ways, it was a liberation.” The town did not escape unscathed, however. Ugandan troops used Butembo as a base from which to plunder the region's diamonds and timber and controlled the customs receipts.

In June, the city narrowly avoided disaster. In its last big offensive before a power-sharing government was formed, a Rwandan-backed rebel group called the Rally for Congolese Democracy nearly stormed it. Soldiers massed on nearby hilltops, and word quickly spread through Butembo that empty lorries were on the way to loot the town clean. Only intense pressure from western governments got the rebels to retreat.

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Sierra Leone's special court

Africa's most wanted

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From The Economist print edition

Will Charles Taylor, Liberia's ex-president, stand trial?

ROCKING back under a shady tree on his farm outside Lagos, Nigeria's president, Olusegun Obasanjo, hinted last week that he might “persuade” his unsavoury guest, Charles Taylor, to leave and face justice. Mr Taylor, Liberia's former president and an alleged war criminal, has been in exile in Nigeria since August. Considering African leaders' traditional reluctance to see their peers judged, Mr Obasanjo's hint was momentous.

Mr Taylor's career has given more than one country cause to wish him permanently behind bars. In 1989, fresh from a Libyan training camp, he began a civil war in his native Liberia that claimed 250,000 lives. He is also said to have been the chief instigator of an equally foul war in next-door Sierra Leone.

In 1997, he terrorised Liberians into electing him president. He came unstuck after being indicted, in June, for war crimes in Sierra Leone, by a UN-sponsored tribunal based in Freetown, Sierra Leone's capital. The next day, rebels attacked Monrovia, Liberia's capital. Three bloody months later, Mr Taylor fled to Nigeria.

Mr Obasanjo said that, if the new transitional government in Liberia asked, he would persuade Mr Taylor to go home. But Liberia is still in turmoil, so its frail government would probably not welcome back so disruptive a figure. If he is to stand trial anywhere, the best bet is the Special Court in Sierra Leone.

Little fanfare attended the court's inauguration last year. But then, it was always supposed to be different: a slicker, cheaper version of the usual bloated UN war-crimes tribunal. Formed under an agreement between Sierra Leone's government and the UN, the court has a narrow mandate: to try only those with the “greatest responsibility” for Sierra Leone's dark decade of limb-lopping and mass rape. It has only a three-year term and $75m to spend. By comparison, the Rwandan genocide tribunal, based in Tanzania, has in eight years secured only 16 convictions, despite a biennial budget of $204m.

The Special Court is supposed to show Sierra Leoneans, at close hand, that the age of impunity is over. Led by an impassioned American chief prosecutor, David Crane, the investigations began well. Early this year, a dozen alleged mutilators-, murderers- and rapists-in-chief were rounded up. Most were former members of Sierra Leone's repellent rebel group, the Revolutionary United Front (RUF), but one was a former government minister, Sam Hinga Norman. Then the court indicted the biggest fish, Mr Taylor, for allegedly launching and supplying the rebels.

America, the court's biggest donor, was not amused. By indicting Mr Taylor, a serving head of state, Mr Crane set a precedent that many in Washington found alarming. Unrepentant, Mr Crane threatened to indict Libya's president, Muammar Qaddafi, as well, for training Mr Taylor and Sierra Leone's rebel chief, Foday Sankoh.

This summer, the United States was under pressure to end the war in Liberia, a former client state. Never keen on sending troops to such a strategically unimportant charnel-house, the Americans refused to countenance the idea until Mr Taylor was gone. Nigeria's offer of refuge to Mr Taylor thus spared Washington's blushes. The United States Congress was outraged, and put up a $2m bounty for Mr Taylor's arrest, but others reckoned that, in the absence of American troops, Nigeria's invitation probably saved thousands of Liberian lives. They also noted that more than 1,000 Nigerian peacekeepers have died trying to put out Mr Taylor's two wars—twice the number of Americans so far killed in Iraq—and that Mr Obasanjo never promised Mr Taylor a permanent refuge.

Mr Crane is now hedging his bets. Most weeks, he calls for Mr Taylor's arrest, while also maintaining that

trying him is not vital to the court's success. This is questionable. After meetings with his “clients”—as he refers to Sierra Leoneans—Mr Crane drew up a short-list of the three men most generally blamed for Sierra Leone's war. Of this trinity, two are now dead: Mr Sankoh of a stroke, and Sam “the Mosquito” Bokarie, a professional disco dancer turned psychopathic rebel, murdered by Mr Taylor, according to Mr Crane. That leaves only one of the terrible trio left to prosecute.

Whether Mr Taylor will ever stand in the dock, however, remains in doubt. Mr Obasanjo is one of the chief advocates of the New Partnership for Africa's Development (NEPAD), a plan under which African leaders are supposed to subject each other to “peer review”. He has also, admirably, refused to invite Zimbabwe's tyrant, Robert Mugabe, to this week's Commonwealth summit in Abuja, the Nigerian capital. But there are limits to the chastisement one African leader will inflict on another. Should Mr Mugabe fancy visiting Nigeria after the summit, Mr Obasanjo said that would be no problem.

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Burundi's civil war

Diehard Hutus

Dec 4th 2003 | BUJUMBURA
From The Economist print edition

Small country, big war

AFP

Time for the refugees to go home?

OF ALL the obstacles to peace in Burundi, none now looms larger than Agathon Rwasa. The country's largest rebel group joined Burundi's transitional government this week, but Mr Rwasa's tiny army, the Forces of National Liberation (FNL), still loves to lob mortar shells into the richer neighbourhoods of Bujumbura, the capital. He is a shadowy figure. Hardly any Burundians would recognise the 39-year-old guerrilla chief if they saw him. From his hideout near the border with neighbouring Congo, Mr Rwasa levies “war taxes” and makes impossible demands of the Burundian government.

Burundi's civil war, which has seen 300,000 people killed and 1.2m flee their homes, should be drawing to a close. Rebels from the majority Hutu tribe have been fighting in the hills since 1993, when renegade soldiers from the minority Tutsis killed Burundi's president, a Hutu. The war is not purely an ethnic conflict, however. In May, Burundi's Tutsi president stood down in favour of his Hutu deputy, Domitien Ndayizeye, under the terms of a power-sharing accord signed in 2000. This year's worst fighting has been between the army and those Hutus who still rubbish the political process.

This week, the biggest Hutu rebel group, the Forces for the Defence of Democracy (FDD), laid down its arms in return for a piece of power. Effectively rewriting the terms of the peace accord, Mr Ndayizeye agreed to give the FDD's leader the third-most important job in government, plus three other cabinet posts, and a share of authority over a reconstituted army and police force.

This is good news for Burundi's harassed civilians. The FDD has about 20,000 fighters who, besides killing, often stole cattle and grain. Since the FDD began talking seriously last month, the killing has slowed dramatically. The fighters will soon enter demobilisation camps, and refugees can hopefully start heading home.

Which leaves the FNL. Mr Rwasa's spokesman, Pasteur Habimana, relays the group's message by mobile phone from the hills. The FNL, he says, wants to negotiate only with “the Tutsis”, even though the country now boasts a multi-ethnic government. It wants a new “social contract”, written by peasants, office workers, women and street children. FNL rebels, he says, are sturdy Hutu farmer-soldiers, 10,000 strong, who cultivate manioc by day and fight by night. They fear that if they join the government, they will be bamboozled by the better-educated Tutsis. Among other things, they want Burundi's Tutsis to

apologise for the massacre of 250,000 people in 1972, a slaughter aimed at wiping out the Hutu intelligentsia.

Their grievances may be real, but the FNL are thugs. Mr Rwasa has 2,000-odd soldiers, mostly children. He reportedly shoots those comrades who disagree with him, and shakes down businessmen to keep his operation afloat. Some complain of having to deliver sacks of cash—dollars, please—to FNL bagmen, or risk their trucks being hijacked. Mr Rwasa, says one peeved Burundian, “has no reason to end the war”. If the transitional government can actually govern, however, the FNL's few remaining supporters may decide that ten years of mayhem is enough. Little by little, say Burundians, peace is coming.

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United Arab Emirates

Should you buy in Dubai?

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In one Gulf state, investors may be too confident

BOMBS may be going off elsewhere in the Middle East, but the southern Gulf emirate of Dubai reverberates to a different sound: building. The city is in the grip of an investment boom as the energetic crown prince, Sheikh Mohammed bin Rashid al-Maktoum, seeks to cash in on surging demand for tourism, technology and finance in Dubai.

The latest punt is Dubailand, a tourist city costing $4.9 billion, that is meant to help attract 15m visitors a year to Dubai by 2010; last year some 4.8m people came, up by one-third since 2001. Dubailand's 45 theme parks, sports centres and discovery zones are supposed to help fill the 100 or so hotels being built on the two giant “Palm Islands” emerging, at a cost of $6 billion, off Dubai's coast.

Can the boom be sustained? Perhaps, though residential property may be a worry. More than 100 swish apartment towers are going up, as well as a dozen or so sprawling housing estates. For the first time in the UAE, foreigners can buy property. Even so, that is a huge supply shock for a city of just 1m inhabitants, perhaps half of them Asian labourers.

Still, few real-estate speculators have over-borrowed from local banks. The government granted most of the land free; many firms are already cash rich; Dubai's building costs are low, thanks to those amenable Asians; and Standard Chartered thinks the Emirates' GDP will grow by 8% this year—as long as oil output grows and its price stays high.

The worst threat to Dubai's dream may be political: a terror attack on a state that is too kind to the infidel would scare tourists and investors. So far, terrorists have not targeted the Emirates. But one of the pilots on September 11th was a UAE citizen.

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Egypt's presidency

After Mubarak, who's next?

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The troubling uncertainty of Egypt's succession

HALFWAY through a speech to parliament last month, Hosni Mubarak, Egypt's president, turned pale and mopped his brow. He was hustled into an anteroom, from which he re-emerged 50 minutes later, smiling. Aides explained that he was suffering from flu, but the incident—Mr Mubarak's first public sign of frailty in 22 years at the top—has prompted open talk about hitherto-whispered questions. Who will succeed the 75 year-old president, and how will he be chosen?

The 1971 constitution states that if the president dies, the speaker of parliament should take the helm temporarily, until the legislature chooses a replacement by a two-thirds majority, who is then confirmed by popular referendum. Mr Mubarak was vice-president when parliament promoted him after the assassination of Anwar Sadat in 1981, and Mr Sadat had held the same post when he succeeded Gamal Abdel Nasser 11 years earlier. All three were former army officers.

Mr Mubarak, however, has never named a vice-president, nor even hinted at the possible identity of one. Coyly and repeatedly, he has said that it was hard to find anyone suitable. This reticence has fed speculation. Some believe the president has been waiting for the right moment to anoint his 40-year-old son, Gamal. The younger Mubarak has indeed gained a higher profile recently, advocating political and economic reforms from within the ruling National Democratic Party, but choosing him as vice-president would invite charges of betraying the republican ideals of Egypt's 1952 revolution.

Others say Mr Mubarak has kept his options open, avoiding the traditional route of appointing a deputy, in order to keep the peace within his inner circle. This tactic may have succeeded in checking the ambitions of powerful henchmen, but Egyptians complain of a growing sense of drift. With the region in turmoil, Egypt's own economy in a profound slump, and the gap between the government's promises and performance perceived to be yawning ever wider, their anxiety about the future is understandable.

Mr Mubarak's interrupted speech was a case in point. Eloquence about political reform was belied by the vote-rigging that produced the very body he was addressing, and that has marked most Egyptian elections during his tenure. Mr Mubarak declared that “the scope of democratic practice has expanded widely,” but only days before, the government had blocked the creation of yet another would-be political party, its 61st such ban in 25 years. The president spoke of freedoms, yet last month, Saad Qutb, a 44-year-old accountant and lowly member of the Muslim Brotherhood, an Islamist group, became the latest Egyptian to be beaten to death while in police custody. His was the 34th such case documented by human-rights groups in the past three years.

Public protest has been all but invisible. Few Egyptians are politically active. Inured to disjunctures between their government's words and actions, they have long tended to shrug and blame inept officials rather than poor leadership. But the traditionally complacent middle class may at last be losing its patience with erratic policymaking. For example, only this week did the government appoint a board to run the Central Bank, seven months after passing ambitious new banking rules, and at a time of creeping inflation, rising public debt and rampant black-market currency speculation. Another recent decree reinstated a sixth grade for elementary schools, reversing an earlier decision to abolish it that had panicked parents.

Signs of systemic decay now worry even the relatively pampered elite. Yahya al-Gamal, an outspoken expert in constitutional law, describes Egypt as being in a frightening state of negligence. “Not one institution—except perhaps part of the police—is doing its job properly,” he claimed in a recent interview. “Health, education, the legal system, our universities: none has conviction in its tasks, or in the country.”

Mr Gamal believes the only way to avert an explosion is to adopt radical political reforms. Many Egyptians consider such talk alarmist, and would be happy for Mr Mubarak simply to name a successor. But Mr Gamal's prescription is quietly supported by many others, including much of Cairo's commentariat and the half-dozen licensed but flimsy opposition parties: the 22-year-old emergency laws that restrict public life need to be abolished; political parties, the press and the judiciary should be allowed to function freely; and the constitution should be revised to allow for open and direct presidential elections, before Mr Mubarak's fourth six-year term expires in 2005.

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Russia's parliamentary elections

Please take your seats

Dec 4th 2003 | MOSCOW
From The Economist print edition

AFP

After this weekend's Duma elections, real politics in Russia will move away from voters and into the Kremlin corridors

Get article background

ACROSS from the Duma, Russia's lower house of parliament, a poster reads “Russia needs to be strong, united. V.V. Putin.” Both the colours and the map of Russia on the poster are identical to those in the logo of United Russia, the main pro-Kremlin block of parties. For a sitting president to campaign openly on behalf of a political party is illegal. But to say that Russia should be united—who can argue?

Certainly not the Duma. In the elections on December 7th, United Russia is expected to increase its present 40% share of the seats to around half, and quite possibly more. All polls, whatever their source, put it well ahead of the Communist Party, which now has the largest number of seats of any single party. Add to United Russia other parties that usually vote with it, and the government is sure to have enough votes to pass all the laws it wants. With the right combination of horse-trading and palm-greasing, it might even gain the two-thirds majority that it needs to amend the constitution.

Ask a Russian what United Russia, a confederation of political vehicles formed after the 1999 election, believes in or has done, and he will be hard put to reply, save for one thing: it supports President Putin. And the president, in return, supports United Russia. According to the Organisation for Security and Co-operation in Europe, which is monitoring the election, there are “verified instances of the use of administrative resources” for the party's campaign. These include loans of government buildings and aeroplanes, as well as the backing of the main television channels, all of which are state-owned. Television stations tend to portray the Communists negatively, and to devote around a third of their airtime to covering the ever-popular president, which amounts to free publicity for United Russia.

This is pretty tame election-fiddling by the standards of some countries—and indeed by the standards of most local elections in Russia itself. But United Russia does not need much fiddling. Mr Putin has delivered economic growth and stability. The arrest, in October, of Mikhail Khodorkovsky, Russia's richest man, has been popular, as the get-rich-quick “oligarchs” are among Russia's most hated men. The party's media image is so good that, even though it refused to take part in televised debates with other

parties, opinion polls later showed that people judged it to have been the best performer in them.

And the opposition is weak. The parties of the left, the Communists and the social-democratic Yabloko, were both burned by revelations of how much backing they enjoyed from big business—even the Communists have a couple of dozen business leaders on their party list—and for speaking out against Mr Khodorkovsky's arrest. Yabloko might not even reach the 5% threshold for getting its party list into the Duma. (Half the 450 seats are allocated by party lists, the other half by single-mandate districts.) The pro-business Union of Right Forces seems to be doing better, thanks partly to the backing of its best-known founder, Anatoly Chubais (see article), but its support comes from the still-nascent middle class.

Post-election blues

This being Russia, the actual voting is not what the election is really about. The real struggle is not between pro-government and opposition forces, but within the pro-government block itself. And the real campaigning will take place not before the election, but afterwards.

The rivalry between the Kremlin clans—the *siloviki*, or those linked to the security services, and those with ties to business—will be reflected in the Duma. At least three small parties are thought to have *siloviki* behind them; one may even pass the 5% hurdle. In the regions, where single-mandate districts and some governors' jobs are up for grabs, there are sometimes two pro-Kremlin candidates for the same post, supported by different factions.

The political horse-trading will continue long after the votes are counted. After the 1999 Duma election, dozens of deputies accepted better offers and switched from one party to another. In theory, says Nikolai Petrov of the Carnegie Endowment in Moscow, it is even possible to create new parliamentary parties, by moving members from a large party to one that failed the 5% barrier but got at least one single-mandate member. A party swollen this way to 12 or more members can get a seat on every Duma committee—a very useful form of influence.

And though the balance in the Kremlin is thought to have tipped in favour of the *siloviki* faction since the resignation of Alexander Voloshin, the pro-business chief of staff, in the wake of Mr Khodorkovsky's arrest, the Duma may push it back some way. Mr Khodorkovsky's jailing on charges of fraud and tax evasion was, it is widely assumed, a punishment for his political influence-peddling. Yet, as in the past, top people from many other big companies are running for office, spread around several parties. According to one forecast they may win around one-fifth of the seats.

That reflects what is at stake for the next four years. There are rumours that after the election Mr Putin will dump his pro-business prime minister, Mikhail Kasyanov. The president has also hinted in recent weeks that the state may start to play a bigger role and that business will be expected to contribute more to its coffers than in the past. Reforms that are coming up include closing tax loopholes, especially for oil firms. Such loopholes, the tax inspectorate said this week, have saved Yukos, Mr Khodorkovsky's oil company, as much as $5 billion in the past five years; lobbying to keep them is thought to have been one of his chief sins. Other reforms will be more business-friendly, such as a clean-up of bureaucracy and a possible break-up of Gazprom, the state gas monopoly.

For investors in Russia, says Chris Weafer of Alfa-Bank, an investment bank, the bigger the pro-Kremlin majority the better, on the ground that it will make it easier to push through economic reforms. As if to underline this, on its last day before the election, the outgoing Duma passed several long-awaited laws, including one on bank-deposit insurance and one creating a stabilisation fund for oil revenues.

But a big enough majority may also enable the Kremlin to pass constitutional changes. Some could be innocuous, such as letting some of Russia's 89 regions merge. Others are more worrying: some sycophants even talk of increasing the length of the presidential term. What Mr Putin really wants is not yet clear; but whatever it is, with the next Duma he is more likely to get it.

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Italy's far right

Former fascists seek respectability

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A big risk, for a glittering prize

AP

Gianfranco leads, Alessandra does not follow

A STORM has broken on the far right of Italian politics. Gianfranco Fini, Italy's deputy prime minister and leader of the National Alliance, first whipped it up last month, when he said he wanted all legal immigrants to be given the vote in local elections. Then came a visit to Israel, during which he disowned much of his movement's chequered past and pointed it down a road that might lead to international conservative respectability.

The National Alliance was founded in 1994 as a broadly based successor to the Italian Social Movement (MSI), created after the second world war to keep alive the ideals of Benito Mussolini. Yet in Israel, Mr Fini denounced Mussolini's anti-Jewish laws as “disgraceful” and said that fascism was an “absolute evil”. On his return, he went further still, declaring that anti-fascism was a core value of his party.

This was too much for the dictator's grand-daughter, Alessandra Mussolini, who said she was resigning from the National Alliance to form a movement of her own. She was not alone in her disgust. Far-right fans of the Turin soccer club, Juventus, unfurled a banner that read “Fini: betrayer of Italy”. Yet pollsters say the anti-Fini brigade is in the minority. A survey for the *Corriere della Sera* found that only 3% of National Alliance voters felt that Mr Fini had taken a wrong turn in Israel. As many as 58% saw themselves as belonging to the “centre-right”, or even “centre”.

Ms Mussolini has a hard row to hoe. The creation of the National Alliance spawned an earlier rejectionist party, led by a former MSI notable, Pino Rauti, that went nowhere. But Mr Fini is also taking a risk, which could grow if weightier figures than Ms Mussolini were to defect, as some are threatening. Any loss of the party's core support could undermine his entire claim to leadership.

However, if Mr Fini pulls off his attempt to disown the party's fascist roots, he could win a glittering prize. The right won a stunning victory at the 2001 election. It has a big enough majority to ram through such controversial measures as a new media law, passed this week, that seems designed to benefit the TV empire of Silvio Berlusconi, the prime minister and leader of Forza Italia. Yet the right is fragile. If Mr Berlusconi goes, Forza Italia could fall apart, with little left to take its place. The conservative wing of the old Christian Democrat party is too small, and Umberto Bossi's xenophobic Northern League both too regionally based and too far from the mainstream.

Distance from the mainstream was long a characteristic of the National Alliance, too—until Mr Fini's visit to Israel. Now it is starting to look more like the Popular Alliance (later Popular Party) that Manuel Fraga fashioned from the wreckage of Francoism in Spain in the late 1970s: a movement that could conceivably link with conservative Christian Democrats to become the dominant party of the right. The PP, under José María Aznar, has governed Spain for almost eight years.

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European Union constitution

Defensive war

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Wanted: one terrible swift sword

WHEN European foreign ministers met for dinner in Naples on November 28th they were in an awkward position. The agenda topic was the draft European Union constitution's plan for a common defence policy. But news had just broken of a tripartite deal on defence struck in Berlin between Britain, France and Germany. The British refused to confirm details of the deal, saying that they still needed to consult “key allies and partners”. The key allies, stuffed with Thanksgiving turkey, were proving elusive.

By the end of the meeting, the details were out: Britain has accepted French and German demands that the EU should be able to plan and run its own military operations. But the deal is hedged with many provisos, allowing the British to insist that NATO's role as the main security organisation for Europe remains unchallenged.

Earlier this year France, Germany, Belgium and Luxembourg proposed that the EU should set up its own military headquarters in Tervuren, outside Brussels. This prospect was greeted with alarm in Washington, because it might have been the embryo of an EU military alliance that could supplant NATO. Now the Tervuren idea has been squashed. Instead the EU's military staff (some 150 officers in the Cortenberg building in Brussels) will be beefed up by a further 30 who can run a military operation.

Britain has also established that an EU-controlled military operation would be a last resort. If NATO chooses not to be formally involved in a military venture, EU countries may run an operation using NATO facilities, as they are doing in Macedonia. Or an EU operation may be run out of a national headquarters, probably in Britain, Germany or France (which provides the headquarters for the EU's current Congo operation). Only if all these options are rejected might an EU military operation be run from its own headquarters—and even then, say the British, it would need the approval of all 25 EU countries.

These are arcane distinctions. They matter because they symbolise different directions for the future of European defence. Those who want the EU to become a serious military power believe that a large oak will grow from the acorn being planted in Brussels. The British insist that they have killed the idea that the EU might supplant NATO as the primary European defence organisation. The Americans, although openly suspicious of French intentions, are being diplomatic—for now. Donald Rumsfeld, the American defence secretary, disappointed journalists by refusing to condemn the initiative on a visit to Brussels on December 1st.

The “headquarters question” does not feature explicitly in the draft EU constitution. The trickiest defence issues in the draft are the plan to allow a small group of countries to forge ahead with military co-operation, and the establishment of some form of EU mutual-defence guarantee. The idea of a defence core, known as “structured co-operation”, has the ostensible purpose of ensuring that countries that take part have genuine military capabilities to contribute. But poorer, pro-American countries, notably from central and eastern Europe, sense a plot to keep them out of an inner defence group that would be dominated by France and Germany. The British, who say they must be part of any core, are campaigning to keep it as open as possible to all EU members.

A mutual-defence clause for the EU is also still controversial. Austria, Ireland, Finland and Sweden say that it is incompatible with their traditions of neutrality. Some NATO loyalists worry that, yet again, the EU may be challenging the primacy of the Atlantic alliance. The language proposed is suspiciously similar to NATO's Article Five, which embodies the transatlantic defence guarantee: it states that, if an EU country is attacked, “other member states shall give it aid and assistance by all the means in their power.” The neutrals seem certain to demand that this clause be changed, or at least that they are allowed to opt out of it.

If these positions do not shift in the next fortnight, defence could prove a big issue at the EU summit in Brussels starting on December 12th, which is meant to finalise the draft constitution. Add in other bitterly contested areas that remained unsettled in Naples, including voting weights, tax and foreign policy, and the odds are rising that the summit will end in stalemate—and that the parties will have to fight anew next year.

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Czech property

Payback time

Dec 4th 2003 | LITOMERICE, CZECH REPUBLIC
From The Economist print edition

Awkward claimants for state property

THE defence lawyers wield attestations half a century old, dusty land documents tied with pink ribbons, attendance records from Nazi social functions, and pages photocopied from history books. They are trying to stop Frantisek Kinsky from reclaiming family property seized by the Czechoslovak state at the end of the second world war, when millions of Germans, Austrians and Hungarians were dispossessed and expelled under the “Benes decrees”.

In this provincial courtroom a modest parcel of forest is at stake. But the suit is one of more than 150 that Mr Kinsky, who is 67, has filed, claiming land and buildings worth at least €100m-150m ($120m-180m). Some properties are hard to value, notably a palace on Prague's Old Town Square that now houses part of the Czech national gallery. Mr Kinsky does not want to turf the gallery out, but says he fancies a flat on an upper floor.

The state claims that Mr Kinsky's aristocratic parents were Nazi sympathisers, and that the family switched from Czech to German nationality, which justified the seizures. Mr Kinsky retorts that his father died in 1938 without ever having owned the family property, because it was held in trust; his mother fled the country in 1940; he inherited the property in 1942-44, when he was a child living in Argentina; and that, if anybody gave him German nationality, it was done without his knowledge or consent. So the Benes decrees, he argues, were wrongly invoked.

The Czech government is worried— partly for its property, and partly because it would prefer the Benes decrees to be forgotten. Many Germans remain angry about the seizures and expulsions, troubling relations between the neighbours. Whatever the merits of his cases, Mr Kinsky is an inconvenient litigant.

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Polish politics

Rokita's lift-off

Dec 4th 2003 | WARSAW
From The Economist print edition

A right-wing revival

A YEAR-LONG scandal over alleged influence-peddling in Poland's ruling socialist party, the SLD, has yet to bring down any top politicians. But it seems to have raised one up. The new star is Jan Rokita, parliamentary leader of a right-wing opposition party, Civic Platform.

Mr Rokita's star has risen thanks to his prominent role in a parliamentary commission investigating the "Rywingate" affair. This turns on a claim by a Polish media group, Agora, that a well-known film producer, Lew Rywin, approached it with an offer to procure amendments to a media-ownership law in exchange for $17.5m for unnamed "people in power". This and other recent scandals—a new allegation surfaced this week of large-scale corruption involving lawmakers—have soured voters on politicians in general, and on the SLD in particular. Mr Rokita is seen as one of parliament's all-too-few honest men.

His shine has rubbed off on Civic Platform. In recent polls, it has beaten the SLD into second place, the first such reversal for the socialists since 1999. The SLD's eclipse was probably just a matter of time, given its poor performance since taking power two years ago. The rise of Civic Platform is good news for Polish democracy, for it suggests that anti-government reaction is working to favour parties of the responsible right—not, as had seemed possible, irresponsible populists at both ends of the spectrum. The country's second-ranking right-wing party, Law and Justice, would happily support Mr Rokita as prime minister of a future coalition government.

The unpopularity of most SLD leaders means that the party lacks a candidate for the presidency in 2005, when Alexander Kwasniewski, the incumbent, ends his second term. That could pave the way for Poland's glamorous first lady, Jolanta Kwasniewska. Opinion polls show her to be a favourite for the job, with support from both left and right. A businesswoman until her husband became president in 1995, she is well-known for her charity work, and as a television personality.

Unlike Hillary Clinton, to whom she is often compared, Mrs Kwasniewska has no political experience. But Poles see that as a point in her favour. The president's job is mainly ceremonial, although it could yet serve Mr Kwasniewski as a springboard from which to dive back into national politics. He might try to found a new party of the moderate left, some think, though that would be an awkward thing to manage if his wife were head of state.

Political insiders disagree over whether Leszek Miller, the prime minister and SLD leader, can hold on to power until the next general election, which is due in 2005. His tough defence of Polish interests in the European Union constitutional debate has been popular at home, but little else has gone right for him. In particular, he has been under pressure over the budget.

Last month the IMF said Poland's public sector was "bloated by large and poorly targeted social transfers, inefficient public enterprises, and high and rising public debt". It went on that this could threaten the country's economic upturn. But cutting public spending would anger SLD supporters. Mr Miller's government agrees that cuts are needed, but is trying to put most of them off until 2005 and beyond—when somebody else, perhaps Mr Rokita, may be in power to take the blame.

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Terrorism in Turkey

Veiled threats

Dec 4th 2003 | ANKARA
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The bad side-effects of a headscarf ban

Reuters

Student or terrorist?

THE investigation into last month's suicide-bomb attacks against Jewish and British targets in Istanbul seemed to take a leap forward when Syria handed over 22 suspects to Turkey on November 30th. The confessions of Hilmi and Leyla Tugluoglu, two suspects who ran a secretive Islamic theological school for fellow Turks in Damascus, have reinforced al-Qaeda's claims that it masterminded the truck bombings of two synagogues, the British consulate and a British-based bank.

Yet the remaining Turkish detainees from Syria—mostly students—were freed. Among them were girls who wear the Islamic headscarf. They had been forced to study abroad, explained their tearful families, only because of laws barring the headscarf at local schools and universities. These claims have prompted fresh debate over the wisdom of banning the headscarf for Turkish women, whether in education or in state institutions.

The logic of those who insist that the ban must be enforced, notably hawkish generals and their pro-secular allies in the establishment, is that it helps to curb the religious militancy that the headscarf symbolises. According to Mazlumder, an Islamic-leaning human-rights group, around 20,000 Turkish female students were disciplined in 1999 for flouting the ban. “Some put wigs over their scarves. Many more simply go abroad,” says Yilmaz Ensaroglu, who chairs the group. Yet it is contact with zealots at universities elsewhere in the Islamic world, he argues, that could “really radicalise the girls.”

Under pressure from the generals, Turkey's prime minister, Tayyip Erdogan, a former Islamist who swept to power a year ago, has backed away from pledges to scrap the headscarf ban. The wife of his foreign minister, Abullah Gul, appears recklessly bold in contrast. In 2000 Mrs Gul filed for damages at the European Court of Human Rights, after being refused admission to Ankara University because of her headscarf. Her husband was an opposition politician, not a minister, at the time; but she has not withdrawn her complaint. Should the court rule against Turkey, Mr Erdogan's government may even end up footing the bill.

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Germany's declining population

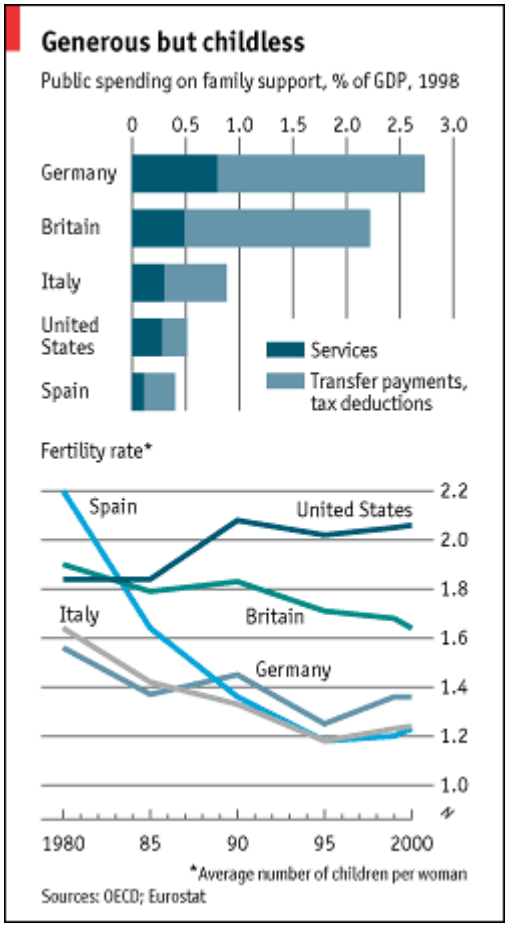
Kinder, gentler

Dec 4th 2003 | LAER
From The Economist print edition

Efforts to raise the birth rate may not succeed

IF GERMANS do not die out some time in the 22nd century, it will be thanks to such places as Laer, near Münster. Unlike most, this town of 6,500 counts more cradles than graves every year. Indeed, it is one of Germany's most fertile spots: in 2002, it had 13.5 births per 1,000 people, well above the national average of 8.7. Yet two years ago, when Laer boasted of its record, nobody cared. These days, Hans-Jürgen Schimke, the mayor, finds many journalists on his door-step.

Germany is anxiously looking for ways to tackle one of its biggest challenges: a shortage of children. The government has decided to spend serious money on child care. The social reforms endorsed by the opposition Christian Democrats at their party congress this week included plans to subsidise the pensions of parents.



In 2000, the average fertility rate for German women was only 1.36 children apiece, one of the lowest in Europe. Of women born in 1955—the latest cohort to pass child-bearing age—more than a fifth have had no children at all. Germany is becoming a country dominated by ageing dinkies (double income, no kids). Besides causing future financing problems for health care and pensions, this is hardly conducive to renewed economic dynamism. That it is a problem shared by some other European countries, especially in the Catholic south (see article), is no consolation.

The German government has tried to do something. In 1998 public spending on family support was a whopping 2.7% of GDP, or over DM100 billion ($57 billion). But unlike some countries with higher birth rates, some three-quarters of this money went in direct benefits and tax breaks, rather than subsidised child-care or other services (see chart).

Child rearing, says Gisela Erler, head of pme Familienservice, a child-care consultancy, has traditionally been considered a private not a public matter. Family values once urged that mothers be shielded from the outside world, propagate the German race and leave the kitchen only to go to church. Germany's historic mix of romanticism, Nazism and Catholicism may explain why, even today, many women feel like a *Rabenmutter* (cruel mother) if they put their children in a kindergarten.

The consequence is that, in western Germany at least, child-care facilities are poor or non-existent (they are better in the east because the communists needed women in the workforce). There is hardly any care for infants and toddlers; most pre-schools close at mid-day; even primary schools are not open much longer. As women get better educated, it is lack of child-care support, not selfishness, that keeps down the birth rate. Many young women, argues Bert Rürup, an economist, feel they cannot have both children and a career. High opportunity costs in lost income and career chances encourage women to put off having a baby. The average first-time mother is almost 30. Nearly half of female academics have no children. Only 60% of women work, fewer than in America, Britain or Scandinavia.

Hence the government's plan to spend €1.5 billion a year after 2005 on child care, and to invest €4

billion in all-day schools over the next four years. These measures, promoted by Renate Schmidt, the family minister, may make some difference, whereas the opposition plans to subsidise pensions seem more like past policies that have yielded meagre results. But the hard truth is that money alone, whatever form it takes, is unlikely to solve Germany's demographic problems.

What really needs to change are entrenched cultural attitudes. Politicians in such traditional places as Bavaria are stuck in a mindset that says the right life for women is *Kinder*, *Küche und Kirche* (children, kitchen and church). Laer's high birth rate may be because the council was generous over child care. The village boasts not only three all-day pre-schools, but an infant and toddler care group and all-day elementary school as well.

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Italy's declining population

Bambino boom

Dec 4th 2003 | ROME
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Italy's birth rate picks up

THE Italian government is hoping that cash will stimulate breeding. This week, it began handing out a "baby bounty" of €1,000 ($1,200) to couples for every child after their first. Even adoption qualifies, though—reflecting the scheme's parentage from the anti-immigrant Northern League—the mother must be either Italian or a resident with an EU passport. The hope is that more births will be an alternative to accepting millions of immigrants from beyond Europe.

Yet few believe that the plan will work. *La Stampa* calculates that €1,000 barely covers the cost of initial purchases for a newborn, plus nappies and food for the first three months. And there is no guarantee that the baby bounty will continue to be paid beyond the end of 2004. But with the world's oldest population, and the European Union's second-lowest fertility rate (1.26 children for every woman of child-bearing age, beating only 1.25 in Spain), Italy surely has to try everything. Or does it?

There are signs that the corner might have been turned without the need for more state intervention. The fertility rate has quietly crept up since 1995, when it bottomed at 1.18. Demographers say that about a fifth of the increase is due to immigration; some of it may also be a bounce-back after a one-off rise in average child-bearing age. But the main factors seem to be cultural and socio-economic.

Except for Germany, the EU's lowest fertility rates are all to be found in its southern countries. Feminists have long argued that women have cut out motherhood because they cannot combine it with work or study. They need such things as crèches, partners who are ready to help with housework, and employers who are willing to take them back after childbirth.

The latest figures seem to bear out this theory. While birth rates continue to fall in the poorer and more traditional south of Italy, they are rising in the north and centre, just where one might expect to spot the first effects of changed attitudes. Emilia-Romagna, which has some of Italy's most progressive local authorities when it comes to family support, has seen the biggest rise in births anywhere, up by some 28% since 1995. Maybe the baby bounty will prove unnecessary.

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Charlemagne

God meets the lawyers

Dec 4th 2003
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Arguments about God and the preamble to the European constitution

TWENTY-FIVE European foreign ministers sat around the table in Naples last weekend. But an unseen presence hovered in the room: God. A spot of divine inspiration is always handy when ministers start arguing about the draft constitution for the European Union, but this time it was God Himself who was the topic of debate. For one of the most controversial issues is whether to include an explicit reference to Christianity in the statement of values that serves as a preamble to the constitution.

The Poles are leading the God squad, with some support from other Catholic countries such as Italy, Spain and Ireland, as well as from several Christian Democratic parties across the continent. The French, for whom secularism is an article of faith, are adamantly opposed, with strong support from the Danes and other northern Europeans, as well as from Socialist and Liberal politicians. Several countries are not bothered either way. For the protagonists, however, the argument goes to the heart of their sense of nationhood.

The Catholic church provided spiritual comfort and inspiration for Poles during the years of Godless communism. They consider the idea of a statement of European values that has no mention of Christianity to be abhorrent. Polish politicians also say that they could lose a referendum (if they have one) should the Holy Father let it be known that he does not approve of the constitution. On the other side, the French maintain that a rigid separation between religion and politics is an essential part of their national identity, reflecting their revolutionary inheritance and republican ideals.

The French are happier than the Poles with the text as it now stands. That is hardly surprising, since the preamble was written by Valéry Giscard d'Estaing, a former French president who chaired the Convention on the Future of Europe that wrote the draft constitution. His draft attempts a brief summary of the common history and values that form the basis of the “great venture which makes of it [Europe] a special area of human hope.” But, even though he was personally lobbied by the pope on the point, Mr Giscard d'Estaing grants God only the briefest acknowledgment, making reference to “the cultural, religious and humanist inheritance of Europe.”

For the Poles and their allies, such scanty treatment misrepresents history. They argue that the first stirrings of European civilisation were intimately linked to notions of Christendom. For Gianfranco Fini, Italy's deputy prime minister, Christianity continues to be a defining feature of Europe. “If you go from one end of the continent to the other, what is it that says you are in Europe?”, he asks rhetorically. “The presence of the church.” But such arguments trouble secularists. Early ideas of Europe may have been partly forged by crusades against Muslims and other infidels. But the modern EU has millions of Muslim, Hindu and Jewish citizens. Moreover, it has accepted that Turkey, a big Muslim country, can be a long-term candidate to join. An explicit reference to Christianity in the constitutional preamble might suggest that the EU sees itself as a “Christian club”—precisely the wrong message to send to the Turks and others at a time when the western world is striving to avoid a clash of civilisations.

Arguments about religion and fundamental values do not sound like the sort of thing that can be settled by clever legal drafting. But—this is the EU—a compromise is already in the works. The Italians, who are chairing the constitutional negotiations, suggest that the final text might refer both to Christianity and to the secular nature of the modern European state.

How neat. And how uninspiring. For beyond the argument about Christianity, European leaders should really be debating whether their constitution needs a preamble at all. Mr Giscard d'Estaing's original plan was to come up with something as inspiring and memorable as the preamble of the American constitution, which reads: “We the people of the United States, in order to form a more perfect Union,

establish Justice, insure domestic Tranquility, provide for the common defence, promote the general welfare and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America."

In search of Philadelphia

Unfortunately, where the Founding Fathers came up with a single, stirring sentence, the Giscard preamble rambles on for six paragraphs. Like an over-ambitious student essay it starts with a quotation from Thucydides (in the original Greek): "Our constitution...is called a democracy because power is in the hands not of a minority, but of the greatest number." The preamble continues with some utterly forgettable sentiments about civilisation, culture, prosperity and other excellent ideas, and ends with a vote of thanks to none other than Mr Giscard d'Estaing and his colleagues. That the EU emerged above all as a reaction to two world wars is only tacitly acknowledged in a sideways reference to the determination of Europeans to "transcend their ancient divisions".

A British diplomat struggling to summarise the significance of the preamble writes that it is "pompous and pretentious, but at first view not actively dangerous." Few other readers seem able to muster more enthusiasm. Mr Giscard d'Estaing has suggested hopefully that future generations of European schoolchildren might learn the preamble by heart. But this would seem to be in contradiction of Article II-4 of the constitution's Charter of Fundamental Rights, which states clearly that "no one shall be subjected to torture or to inhuman or degrading treatment or punishment."

The best suggestion in Naples came from the Finnish delegation. They proposed putting the entire preamble in the bin. Come to think of it, haven't a few atavistic curmudgeons suggested doing just that with the whole constitution?

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Terrorism

Guantánamo-on-Thames?

Dec 4th 2003
From The Economist print edition

Britain is exercised about the treatment of Guantánamo Bay detainees, but there are parallels at home

TWENTY-TWO terrorist suspects have been arrested over the past week in one of the biggest series of anti-terrorist raids in England since the al-Qaeda attacks on the United States. One has been charged with conspiring with Richard Reid, the “shoe bomber”. Around 500 people have now been arrested under the Terrorism Act 2000 since September 11th 2001. Only 60 or so have been charged. The rest have been released—as those arrested last week can expect to be if they are not charged within 48 hours of their arrest, with the possibility of a further week's detention on order of a magistrate.

The 16 foreign suspects arrested under the 2001 Anti-terrorism, Crime and Security Act, passed in the aftermath of the September 11th attacks, are not so fortunate. Like the American terror suspects in Guantánamo Bay, most have been held for two years without being tried or even charged. They, too, are now beginning to despair of ever being let out. “The only difference is the cages,” says Shami Chakrabarti, director of Liberty, a human-rights group.

Well, not quite. As the Home Office hastens to point out, unlike the Guantánamo prisoners, Britain's detainees have direct access to a lawyer of their choice. They have a right of appeal to an independent tribunal. And they are “free to leave at any time” to go to their own country or any other country willing to accept them.

All this is true—up to a point. Britain's detainees do have a right to their own lawyers and even receive state-funded legal aid to pay for them. But their lawyers have no access—on security grounds—to any of the detailed evidence against them. Nor are they allowed to represent their clients before the independent tribunal responsible for reviewing their cases when confidential or sensitive information is being discussed—which is most of the time. In October, the tribunal turned down ten detainees' appeals against indefinite detention. None has yet won an appeal.

As for the detainees' being “free to leave at any time”, this is a stretch. Nearly all are asylum-seekers who fled their homes (mostly in North African countries with pretty shaky human-rights records) precisely because of their fear of persecution, torture or death—or so they claim. Besides, under Britain's international treaty obligations, the government is not allowed to deport someone to a country where he risks torture. And not many third countries are going to be willing to accept a terrorist suspect. Only two of the 16 detainees have left. Most of the others are being held in Belmarsh top-security jail in London. All vehemently protest their innocence.

Under the 2001 anti-terrorist act, which applies only to foreigners, the government can detain indefinitely anyone suspected of posing “a risk to national security” or of being involved in international terrorism, but who, for legal or practical reasons, cannot be deported. To do this, Britain has had to derogate from Article 5 of the European Convention on Human Rights guaranteeing the right to liberty and a fair trial. It is the only European country to have done so.

So why has there been such relative lack of publicity over Britain's terrorist detainees compared with those in Guantánamo Bay? Partly because most of the British ones have requested that their names not be made public—for fear of retaliation against their families. Partly because as asylum-seekers and terrorist suspects, they do not attract much public sympathy anyway in Britain. And partly because it is felt that if they are kept locked up, there must be good reasons.

Nine of the 660-odd terrorist suspects being held at Guantánamo Bay are British. Tony Blair has repeatedly voiced concern over their “irregular situation”, urging Washington to “move rapidly toward a

trial in accordance with international law". After talks between the prime minister and President Bush last July, Mr Blair was assured that the two British detainees so far singled out for trial would not be subject to the death penalty, that they would be able to choose their own civilian defence lawyer, and that, exceptionally, the conversations between them and their counsel would remain confidential.

But the British have been holding out for more. In particular, they are insisting on minimum guarantees of a fair trial and an independent appeals procedure. Recent rumours that the nine Britons could be released among "scores" of other detainees—as many as 140 has been suggested—have been discounted by almost all those involved. But the Americans say they are gradually reviewing each case with a view to releasing those who no longer "pose a threat to American security". A total of 88 detainees have so far left Guantánamo, so the Britons there may find their freedom before their counterparts at home.

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Defence policy

Gulliver's dilemma

Dec 4th 2003
From The Economist print edition

Clues to the future of British defence policy

AMERICA is often described as the world's Gulliver, a giant whom other nations vainly strive to tie down. In fact, militarily, Britain is the real Gulliver: just as he is thumb-size in Brobdingnag as well as a giant in Lilliput, so Britain is a military leader in Europe—and the only country apart from France that could have played the complementary role it did in Iraq—yet still a lightweight compared with America. A key choice for British defence policy is how far it should plan to fight alongside the American behemoth, and how far to work with the European midgets.

A strategy paper to be published next week by Geoff Hoon, the defence minister, will suggest an answer—and perhaps help to restore the Pentagon's faith in British loyalty, shaken by the row over the EU's defence plans (see article). Britain, it will say, is likely to fight a large war only alongside America. And, like a foreign office paper released this week, it will emphasise the threat of terrorism, arguing that the armed forces should be prepared for multiple but smallish expeditionary operations in remote and disparate places, rather than just for one big conflagration.

That means spending more money on improving (in the jargon) “interoperability” with America, and on enabling Britain to project power quickly and from a distance. Even though the Americans shared some communications equipment in Iraq, disparities in kit meant that the Brits were largely kept corralled in a separate part of the battle-space. Closing the gap requires better information technology, plus more intelligence-gathering assets (such as unmanned aerial vehicles) and precision weapons: the sort of things beloved of Donald Rumsfeld, America's defence secretary, a high-priest of the modernising agenda known as “transformation”.

That in turn means less money for other things—though Mr Hoon will probably avoid specifics, thus postponing the inevitable protests. The cuts in hardware that began when the cold war ended are likely to continue. For instance, Britain's order of the Eurofighter Typhoon aircraft could be slashed, and some of the army's main battle tanks retired, to be replaced by a new, middle-weight land vehicle that can be transported by air.

Mr Hoon is also unlikely to spell out the implications of the strategy in terms of personnel. Any talk of reducing manpower might seem odd, given the recent commitments to Sierra Leone, Afghanistan and Iraq (which saw the largest call-up of reserves since the Suez crisis of 1956). Military recruitment is strong, as it tends to be after wars, but the army is still below its nominal full strength, and multiple and long deployments will hit morale and retention. All the same, the thinking seems to be that, when most of the 13,500 servicemen in Ulster and 10,000 in and around Iraq come home, fewer infantrymen, but more niche troops (logisticians, special forces and so on) will be needed.

Mr Hoon is also expected to publish an assessment of Britain's role in Iraq. Some aspects of that war, such as the capture of Basra, vindicated the emphasis on precision and intelligence. But in other ways, such as the importance of tanks, the campaign was inconveniently old-fashioned. Some analysts fear that concentrating resources on the high-tech stuff could compromise the heavy armour and jeopardise the army's ability to do the peacekeeping it tends to undertake with other Europeans, and which it is rather good at. If any more regimes are to be changed, low-tech skills might come in useful again.

There is also a suspicion that Mr Hoon's plans will reflect penny-pinching as much as strategy, Atlanticist or otherwise. Like other public services, the armed forces tend to complain that they are under-funded, even as they claim to be doing a splendid job. After a couple of lean decades, the defence budget has stabilised, but is still low by historical standards, and there is more than the usual rancour between the Ministry of Defence and the Treasury. Cuts may be inevitable; but Mr Hoon—the bookies' favourite for

political defenestration after Lord Hutton's report on the death of David Kelly—may not be around to make them.

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Northern Ireland

Constructive, Reverend?

Dec 4th 2003
From The Economist print edition

Northern Ireland's election result was not quite as bad for peace as it looked

Get article background

Reuters

The new, emollient Paisley

EXTREMISTS won, moderates lost in Northern Ireland's election last week. The Democratic Unionist Party (DUP), led by the demagogic Reverend Ian Paisley, and Sinn Fein, the political wing of the IRA, topped the polls. The two losers—the nationalist SDLP and the Ulster Unionist Party (UUP)—were the chief architects and supporters of Northern Ireland's peace process. But the result was not quite as gloomy as it seemed, for neither hardline party is as hardline as it once was.

The news for moderates, however, was nothing but bad. The nationalist SDLP won the fewest votes. Old grandees on their way out, including John Hume, the party's leader, have not been replaced with young blood. The party does not have the energy of Sinn Fein, which electioneers with the zeal the IRA once devoted to killing. The UUP was not, as expected, wiped out, but that is no comfort to its leader, David Trimble. Mr Trimble's chief internal critic, Jeffrey Donaldson, won the largest vote of the election, and at least four other dissidents were elected. The fractious UUP does not display the teamwork that the DUP and Sinn Fein do.

This curious election was held while Northern Ireland's devolved government remains suspended. Because the DUP has got the largest number of seats, it must now be included in the talks that are already under way about restoring devolved government—although it refused to take part in the negotiations which produced the assembly. But the DUP's tone has changed. It used to maintain that the Good Friday Agreement, which established the assembly, was “dead in the water”. Now it promises to “explore” changes to it.

Mr Paisley, who made his name as a rabble-rousing opponent of compromise, refuses to share power with Sinn Fein until the IRA gets rid of its weapons; but then so did the UUP after the republicans broke promises. This week Mr Paisley said that the DUP wishes to be “constructive”—a word not previously thought to be part of his vocabulary.

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Britain's Somalis

Muddled minority

Dec 4th 2003 | LEICESTER AND TOWER HAMLETS
From The Economist print edition

Britain's newest immigrants are having a bad time

DRIVING through the St Matthew's housing estate, in Leicester, Abdirazak Ashkir can point to many improvements wrought by Somali immigrants. The place is safer than it was a few years ago, for one thing; community groups are thriving; and walls are virtually graffiti-free. But Mr Ashkir, a former diplomat who now runs an adult education centre on the estate, is troubled by the evident poverty and lack of diversity. “It's a ghetto,” he says, ruefully. “This wasn't what we had in mind when we came to Britain.”

The sentiment is widely shared. Somalis are firmly on the bottom rung of the nation's social ladder, below Afro-Caribbeans, Bangladeshis and many other refugees. Cherished theories of immigration suggest that they ought to be climbing the ladder to take their place in mainstream society. But it isn't quite working out like that. Having been subjected to an intense dose of prejudice and economic exclusion—the Somali Advisory Bureau, in London, reports that 76% of its clients are unemployed—they are increasingly aggrieved and unsure of how to improve their lot.

If Somalis excel at one thing, it is getting into Britain. Some 44,000 adults have sought asylum in the past ten years, with most succeeding. Their homeland is so dangerous that even hard-nosed immigration officers grant more than a third of claims immediately, compared with 6% for other nations. Others are arriving from mainland Europe: four-fifths of Leicester's roughly 10,000 Somalis won refugee status abroad and are now exercising their right to free movement within the EU.

The problems come when they try to settle. Partly through choice, but mostly through deliberate council policy, most Somalis have landed in poor black and Muslim districts. Even there, they have suffered abuse of an intensity not normally seen in these usually tolerant cities. Conflicts have been sparked by competition—in Leicester, schools and a basketball court hosted riots—but hatred appears to run deeper than rational explanations allow. In the capital, five Somali children and teenagers have been murdered by gangs of strangers in as many years. Small defensive ghettos like the one in St Matthew's have sprung up in response.

The problem with these mini-ghettos is that they concentrate poverty but not political or economic power. Larger ethnic clusters, such as the Bangladeshis of Tower Hamlets, have created thriving businesses and, over the past ten years, seized control of local public institutions. The Somalis cannot do that, partly because their clusters are too dispersed, and partly because so many of their specific needs (long-distance call centres, mosques, halal butchers) are readily met by others.

As a result, Somalis find themselves in a kind of ethnic limbo, suffering all the disadvantages of isolation and none of the advantages. Unable to become an assimilated “model minority”, Somalis can't become a militant minority either.

The best hope for Britain's Somalis lies in their enthusiasm for movement, which some say springs from traditional nomadism. For a despised group, mobility is essential: lack of it condemned Pakistani immigrants in towns like Burnley to poverty when industrial jobs disappeared. For that reason, Leicester's new arrivals are especially inspiring. Most uprooted themselves from safe, prosperous European regions because they thought a multicultural British city would be a better place to bring up children. They have been disappointed; but their next move might be luckier, and more motivated by economics.

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Punctuation

The joy of dots

Dec 4th 2003
From The Economist print edition

Birth of the Apostrophe Liberation Society

CHRISTMAS isn't Christmas without a publishing phenomenon. Last year it was “Schott's Original Miscellany”, a collection of obscure and unrelated facts whose appeal lay in its very uselessness. This year's unexpected success is more practical. “Eats, Shoots & Leaves: The Zero Tolerance Approach to Punctuation”* is bringing cheer to booksellers and pedants all over the country.

A panda walks into a café. He orders a sandwich, eats it, draws a gun and fires. As he is on his way out, the waiter asks him why. The panda hands him a badly punctuated wildlife manual. The waiter reads, “Panda: Large black-and-white bear-like mammal, native to China. Eats, shoots and leaves.”

Punctuation, says Lynne Truss, is the track along which language runs. When it breaks down, so does meaning. She illustrates her point with countless cheerful examples. Where, for instance, would extra-marital sex be without its hyphen? In a completely different moral sphere.

The book is less instruction manual than celebration. “You know those self-help books that give you permission to love yourself? This one gives you permission to love punctuation.” Not the exclamation mark, however, which smacks of laughing at one's own joke.

Readers moved to passion by a misplaced apostrophe are not alone. Milan Kundera once sacked a publisher over a semi-colon; Harold Ross, a former *New Yorker* editor, and James Thurber rowed frequently over commas. Thurber, who disliked them, usually lost. He was once asked by a correspondent why there was a comma in the sentence, “After dinner, the men went into the living room.” “His answer”, says Ms Truss, “was probably one of the loveliest things ever said about punctuation. ‘This particular comma’, Thurber explained, ‘was Ross's way of giving the men time to push back their chairs and stand up.’”

The book is also a call to action. Being a punctuation stickler is, as Ms Truss points out, lonely. You are accused of nerdishness, of interfering, of—God forbid—being middle class. “Sticklers unite, you have nothing to lose but your sense of proportion, and arguably you didn't have a lot of that to begin with.” (Maybe so; but there's a nasty splice comma up at the top of that sentence.)

Why, when other punctuation manuals are on the market (*The Economist*'s style book is available at a very reasonable £16.99), is this one a bestseller? Timing. As people worry about the white rhino only when it is nearly extinct, so they defend punctuation only when it is endangered. The threat is not so much the greengrocer's apostrophe—his tomato's have been on sale for decades—as e-mails and text messages. In the first, speed undermines precision; in the second, brevity destroys form. Worse, both use sacred marks for their profane little emoticons :-) It's enough to drive one to an exclamation mark!

*By Lynne Truss. Profile Books, £15.99

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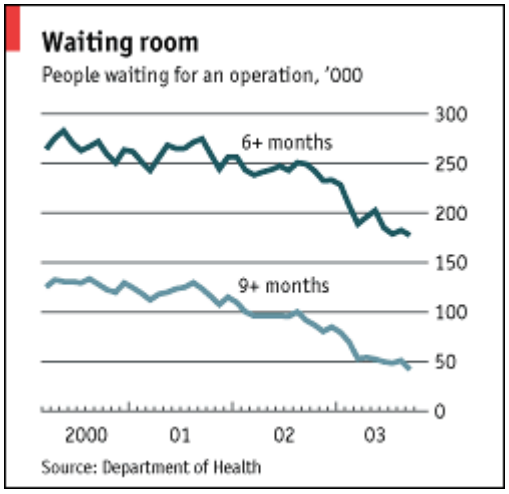
NHS

Something's stirring

Dec 4th 2003
From The Economist print edition

Signs of progress do not quell worries about value for money

ON DECEMBER 3rd, Sir Nigel Crisp, chief executive of the NHS, claimed that progress in the health service was “accelerating”. The NHS was “on track” to meet one of its most crucial and difficult targets by the end of 2005—a maximum waiting-time of six months for admission to hospital. The number of people waiting longer than that had fallen sharply over the past year, by almost 30%.



Sir Nigel depicted an NHS that is changing the way that it delivers health care, with more being done in GP surgeries and outpatient clinics rather than in (costlier) hospital wards. The annual growth in GP referrals to consultants has fallen from its usual rate of 1.4% to 0.2% so far this year. At the same time, procedures in outpatient clinics have jumped by 15%.

But the idea that GPs are doing so much more of the work is implausible. According to the Audit Commission, spending on general practice (excluding drugs) has grown over the past ten years by 20% in real terms compared with an increase of over 60% on hospitals. Between 1997 and 2002, the number of hospital doctors grew by nearly 5% a year; the number of GPs by 1% a year.

A likelier explanation is that patients are benefiting from more and better drugs. In the past four years, the number of prescriptions has increased by 22%. In particular, consumption of statins, which reduce the risk of heart disease, has trebled. Although doling out drugs is expensive—the total cost has increased by 46% over the same period—patients get good value for money from them.

So much cash is going into the health service that it was bound to get a bit better. The real worry is whether taxpayers are getting their money's worth. The jump in procedures in outpatient clinics sounds encouraging but many of these are simple, inexpensive tests. The broadest indicator of hospital activity is the number of “finished consultant episodes”. This measure, which does not cover outpatient procedures but includes costly operations, increased by over 3% in the financial year ending this spring. But sluggish growth in previous years means that it was only 6.5% higher than in 1998-99, although funding in 2002-03 was up by 29% in real terms.

A recent evaluation of the NHS's performance published by the Nuffield Trust, a health-policy think-tank, concluded that “the efforts and investments in capacity building have been prudently responsive to a fragile and underperforming NHS”. But the report did not tackle the value-for-money question. James Strachan, chairman of the Audit Commission, said this week he was worried about NHS efficiency. Speaking at a seminar organised by Civitas, a think-tank, he said that, for example, operating theatres were used on average for only 24 hours a week, even though they should be used for 40 hours.

These signs of progress will comfort the government. But it still faces a struggle convincing voters that they are getting enough out of the huge amount of extra money being pumped into the health service. According to an ICM poll for Reform, a campaign group, on December 4th, 82% of respondents think that “taxes have gone up but services haven't improved much and there is a lot of waste.”

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The Saga empire

An oldies' dream: yes, but...

Dec 4th 2003
From The Economist print edition

A unique "grey-pound" business is for sale—but oldies should not rush to buy

IF IT is ever floated on the stockmarket, the Saga empire can expect to be awash with as many elderly subscribers as the two cruise ships of this "life begins at 50" group, or the tours, insurance and investment products that it sells, the magazine and radio stations that it runs. Saga's success is a tribute to the power of the "grey" market. But let oldies beware: at the £1 billion-1.5 billion price talked of when news broke that its boss, Roger De Haan, wanted to sell, they might do better to wait.

The group was born in 1951, when his father, Sidney De Haan, had the idea of filling his Folkestone hotel in winter by busing in pensioners for cheap holidays from as far north as Yorkshire. One hotel soon became two, then trips abroad, and bit by bit Saga diversified into the wider interests of its customers—and down from pension age to 50-plus. A tiny newsletter became a monthly magazine, with 210 pages this month and a circulation of 1.2m. Saga's data-base now includes 8m of the 19.5m people aged 50-plus who make up two-fifths of Britain's adult population.

This grey(ish) market is growing. A good part of it is also well-off. Despite the spread of early retirement, even in their late 50s two-thirds of Britons—men more, women less—are still at work. As to pensioners, future oldies may one day feel the pinch, and many who depend on a state pension alone do so already, now that this is linked to prices, not average earnings. But many have a decent income, thanks, notably, to final-salary pension schemes; and most are past that big drain on those who could afford them—school fees.

Many have serious capital too: notably, those who moved to smaller houses as their young left the nest—or, still more so, those who inherited a parental home and sold it. A study out this week from the Institute of Fiscal Studies says that a quarter of over-50s have under £1,500 of savings, but a quarter have over £44,500. Not all are hoarding every penny for future needs.

So Saga's magazine is fat with ads: for other firms' walk-in baths or mail-order corduroys but, more important, also for Saga's own products. Yet this is no naturally coherent market. Class differences apart, people in their 50s have far more to spend than those past pension age, who in turn have more than those—typically women on their own—aged 75 or more. Interests and needs also differ: on average, a "middle-aged" household spends twice as much on insurance (Saga's biggest earner by far) as real oldies, and four times as much on package holidays.

How can one sell to so diverse a market? Saga has already gone public once, in 1978, but went private again in 1990: the De Haans disliked the City, and the City did not fancy a group built not on sectoral logic but the age of its clients. Yet Saga has a secret. Its tours, insurance and financial products, though good value, are not extraordinary. But it has one huge selling point: through its magazine, Saga treats its clients as family, and it has their trust. Comedians make fun of it, but seldom is a word said against it in earnest—except by those oldies who hate being with others their age.

Yet is Saga worth a price of 30 or 40 times the £35m of post-tax profits that it earned (on sales of £341m) in the year to last January 31st? There is no comparable company. But Marsh & McLennan, a big American insurance broker, sells in London on a price/earnings ratio of 16; Carnival, an American-run cruise operator, on a forward-looking 28. If Saga does go public (rather than to a single buyer), the faithful should recall what is often true of cruises. Book after the first rush; you'll pay less.

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Aviation

Up, up and away

Dec 4th 2003
From The Economist print edition

Ministers have failed to tackle "insatiable" demand for air travel

AFTER dithering for decades, ministers have finally agreed what to do about London's airports. Stansted is to have the first major new runway in the south-east for half a century. But the aviation white paper, due on December 16th, will leave open the door for further development of Heathrow. It will also propose higher taxes on air travellers which will be announced by the chancellor, Gordon Brown in his pre-budget report next week.

Air passenger duty, which is currently between £5 and £40 per ticket depending on distance and class of travel, is likely to be increased by as much as half. That would raise its annual yield to about £1.4 billion and cover much of the environmental cost of aviation. The Treasury estimates that the external costs of aviation greenhouse gases will treble over the next three decades from £1.4 billion to £4.8 billion in 2030. The European Environment Agency says the total environmental costs of British aviation, including noise, local air quality and global warming, already exceeds £6 billion a year.

Even though Stansted has been fingered for expansion, Heathrow is still likely to get more flights. At present, its two runways are used either for take-off, or for landing, but not both at the same time. This gives locals some relief from noise. The government is now considering allowing both runways to be used simultaneously for landing and take-off. That would increase capacity by more than 10%—roughly 50,000 slots—and would infuriate local residents' groups. The current limit of 480,000 flights allowed at the airport would have to be raised. And the white paper also leaves open the possibility of a third runway at Heathrow within 20 years.

The problem of excess pollution tipped the political balance against Heathrow's early expansion despite strong economic arguments. Ministers were warned that an additional runway would result in several thousand residents living near the airport being exposed to nitrogen dioxide (NO_2) in excess of permitted EU levels.

The precise numbers are in dispute. The government's consultation document suggested that by 2015 as many as 35,000 people could be exposed to NO_2levels of more than 40 micrograms per cubic metre, the EU maximum level. BAA, which operates Heathrow, has commissioned independent research which suggests that fewer than 10,000 people could be affected. BA, the airline which dominates Heathrow, claims in a legal opinion submitted to the government that "the technical evidence points to the EU regulation being met" by the time a new runway is in operation in ten years' time. Ironically for the airlines, most pollution around Heathrow is caused by cars and vans, not planes. One possible solution is a congestion charge to restrain traffic growth around the airport.

Airlines are complaining, but environmentalists are likely to be unhappier with the white paper. The tax rise will do little to restrain the soaring demand for air travel, which is forecast to treble from 180m to 500m passengers a year by 2030. The Royal Commission on Environmental Pollution has said that if air travel is not restrained, British airports could be serving more than a billion passengers by 2050. The government deserves credit for taking decisions from which its predecessors have shied away. But there are bigger problems, and harder decisions, to come.

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Business and universities

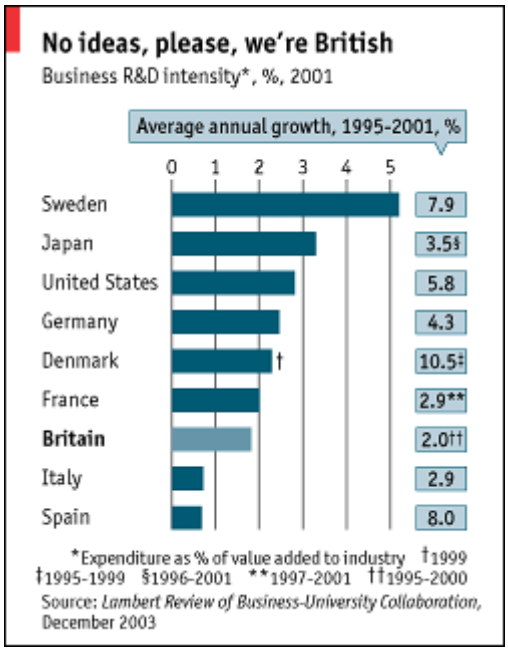
Brains for hire

Dec 4th 2003
From The Economist print edition

Universities have talent but no money. Companies need new ideas. A deal?

EVER since the Industrial Revolution, British policymakers have been worrying that universities don't work better with business. In 1919 the economist Alfred Marshall bemoaned the fact that the fruits of "revolutionary discoveries" in science were reaped by businesses in Germany, "where industry and science have been in close touch".

Yet that touch is elusive. Pharmaceutical and defence-related research aside, Britain's bosses spend less on brainpower than their competitors do. Of the £11.5 billion the private sector spends on research and development, 2.3% goes to universities. As a percentage of value added (a measurement known as R&D intensity) spending is just under 2% in Britain, compared to nearly 3% in America. And it is growing a lot more slowly.



Nobody knows why. There are plenty of theories. It could be that British managers are lazy and scared of technology, or that universities are too humdrum or bureaucratic to attract business interest.

Does it matter? Maybe not. There's nothing wrong with pillaging other people's ideas, so long as you can. But Gordon Brown, the chancellor, thinks it does matter, and believes that more co-operation between universities and business will boost R&D and thus competitiveness. The only question is the mixture of new rules and official chivvying required.

In a report published this week by the Treasury, Richard Lambert, a former editor of the *Financial Times*, highlights the research gap between Britain and its main competitors (see chart) and makes a series of recommendations. Some are sensible. The report rightly criticises government plans to insist that all academic staff have a teaching qualification: this would deter the cross-fertilisation that comes when businessmen give seminars or lectures. And universities should indeed encourage dons to become non-executive directors.

Things are changing already. Sir Christopher Evans, a businessman who commissions research into biotechnology, says that 10 years ago, only 20% of universities understood how to handle intellectual property issues. Now 80% do. "They have learnt that it is better to have 3% of a done deal than hold out for 7% of something that never happens," he says.

Universities' consulting, licensing and spin-offs could all be better managed. But many of the tweaks that the report suggests address problems that were caused by government interference in the first place. It is no surprise that universities are bureaucratic and risk-averse: they live in a centralised culture that demands accountability for everything, and punishes failure more than it rewards success.

The other big issue is whether the subsidy for research should support excellence, or geographical balance. The universities that most excite businesses are the ones that get big dollops of government research money. This argues for concentration on a handful of top departments. But that annoys the less good universities, and their defenders. The Lambert report fudges the issue. It wants excellence, but with research money doled by regional bureaucracies. Fairmindedness is a fine thing, but all too often the price is mediocrity.

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Bagehot

The point of Tony

Dec 4th 2003
From The Economist print edition

Tony Blair is risking his job for top-up fees. Why do they matter so much to him?

IT IS fashionable these days to ask in sneering tones: “What exactly is Tony Blair for?” The presumption is that, apart from winning elections and dragging the country into an unnecessary war, Mr Blair's premiership has been essentially vapid. If the prime minister were just to disappear, carried off perhaps by some combination of Hutton and ill-health, he would, it is argued, leave little trace on the political landscape.

Although unfair—this government has made quite a lot of things a little better and only a few things worse—it's a charge to which Mr Blair is increasingly sensitive. Which in part explains his willingness to risk pretty much everything to get his way over university tuition fees.

At his monthly press conference on December 2nd, Mr Blair described the controversial legislation, which nearly 150 Labour MPs have signed a Commons motion opposing, as “a very major flagship reform” from which “there will be absolutely no retreat.” He added, “of course my authority is on the line.” The prime minister's message was clear. Hard choices have to be made and he is prepared to go down fighting for them.

As things stand, Mr Blair has less than two months to persuade his deeply sceptical party that he is right before he must face a Commons vote. If there were one now, the government would be humiliatingly defeated. Mr Blair, having deliberately upped the ante this week, would be grievously, possibly even mortally, wounded.

Mr Blair's willingness to stake so much on an issue to which few voters gave a second thought at the time of the last election strikes some as quixotic. But he has decided that rescuing the universities is the litmus test for his leadership. The vast but under-funded expansion of undergraduate numbers over more than a decade has undermined the quality of both teaching and research. Without additional resources, British universities will fall further behind other countries'; and Britain's intellectual capital, and eventually its competitiveness, will decline.

Mr Blair thinks that the only way to apply those resources in a way that is durable and fair, while encouraging still more people to go to university, is for graduates to meet more of the cost of their own education. He also believes that the price of degrees should differ according to their cost and their value to the recipient. Hence the government's policy of variable top-up fees, capped for the foreseeable future at £3,000 ($5,182) a year and repaid after graduation through the tax system.

The bankruptcy of the alternatives on offer suggests that Mr Blair has got it more or less right. Both the Tories and the Liberal Democrats cling to the idea of purely tax-funded higher education: the former intend to save money by cutting student numbers; the latter claim that extra money can be painlessly extracted from people earning more than £100,000 a year. True to form, the Lib Dems have already “spent” these additional tax revenues several times over on other pet causes. But it is the Tories whose cynicism is most breathtaking. Michael Howard, the new party leader, is entitled to exploit Labour's divisions. But such blinkered defence of a middle-class perk can only undermine his efforts to restore some credibility to his party.

Mr Blair's problems are, however, mostly with his own party. The rebels split into four groups. The hard core—mainly “the usual suspects”—rejects tuition fees entirely and has no qualms about increasing general taxation. They argue that the prospect of debt will deter students from poorer homes.

For the others, the issues are more complicated. Many of those who accept that students should make a

contribution oppose variable fees. They (correctly) see allowing universities to charge differential fees as the first step to creating a proper market in higher education, something they abhor. A third, overlapping, group claims—not unreasonably—that nobody should be obliged to vote for a policy that was specifically, but short-sightedly, excluded from the manifesto. Finally, a handful of MPs in marginal seats fear electoral retribution.

A close run thing

As always, Mr Blair is utterly confident of his own powers of persuasion. He acknowledges the manifesto problem, but is convinced that the more he exposes people to the arguments, the less they will be able to resist them. He is also buoyed by the (fairly) enthusiastic backing of Gordon Brown. After the air-clearing of a few weeks ago, that critical relationship is currently working better than it has for quite a while. And few who remember the fuss over Laura Spence will question the chancellor's egalitarian credentials in this area.

But the prime minister may be expecting Mr Brown to deliver more than he can. Even the chancellor's most compliant supporters are in an obstinate mood. Nor is there much scope to negotiate concessions with the scheme's opponents. Mr Blair is not prepared to go through the contortions that destroyed much of the point of foundation hospitals. In particular, he and the education secretary, Charles Clarke, will not budge on variability—an issue of principle for both sides.

Mr Blair wants everyone to understand that he is in deadly earnest. He will not compromise because he believes that this, in some ways more than Iraq, is his defining moment. Important though universities are in themselves, the ideas driving top-up fees—diversity, choice, innovation and quality—are central to the wider agenda of public-service reform on which, he believes, history will judge him.

As one Downing Street insider puts it: “If we can do this, we can do anything. That's why Tony is prepared to spend so much political capital: it shows that we're not just going to do the easy bits of reform.” It will be a desperately close-run thing. But it's what Mr Blair, at least, thinks he is for.

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MONITOR

Open source's local heroes

Dec 4th 2003
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AP

Software: If the commercial sort does not speak your language, open-source software may well do so instead

ITS POPULARITY is growing around the world, but open-source software has particular appeal in developing countries. In China, South Korea, India, Brazil and other countries, governments are promoting the use of such software which, unlike the proprietary kind, allows users to inspect, modify and freely redistribute its underlying programming instructions. The open-source approach has a number of attractions. Adopting open-source software can reduce costs, allay security concerns and ensure there is no danger of becoming too dependent on a foreign supplier. But there is another benefit, too: because it can be freely modified, open-source software is also easier to translate, or localise, for use in a particular language. This involves translating the menus, dialogue boxes, help files, templates and message strings to create a new version of the software.

Large software vendors have little incentive to support any but the most widely spoken languages. Microsoft, for example, provides its Windows 2000 operating system in 24 languages, and Windows XP in 33. The company also supports over 20 languages in the latest version of its Office software suite. Yet for many languages, commercial vendors conclude that producing a localised product is not economically viable.

The programmers who produce open-source software operate by different rules, however. The leading desktop interfaces for the open-source Linux operating system—KDE and GNOME—are, between them, available in more than twice as many languages as Windows. KDE has already been localised for 42 languages, with a further 46 in the pipeline. Similarly, Mozilla, an open-source web browser, now speaks 65 languages, with 34 more to follow. OpenOffice, the leading open-source office suite, is available in 31 languages, including Slovenian, Basque and Galician, and Indian languages such as Gujarati, Devanagari, Kannada and Malayalam. And another 44 languages including Icelandic, Lao, Latvian, Welsh and Yiddish are on the way.

Localising software is a tedious job, but some people are passionate enough about it to resort to unusual measures. The Hungarian translation of OpenOffice was going too slowly for Janos Noll, founder of the Hungarian Foundation for Free Software. So he built some web-based tools to distribute the workload

and threw a pizza party in the computer room at the Technical University of Budapest. Over a dozen people worked locally, with about 100 Hungarians submitting work remotely over the web. Most of the work—translating over 21,000 text strings—was completed in three days.

Dwayne Bailey of translate.org.za, an open-source translation project based in South Africa, says localising open-source programs into Zulu, Xhosa, Venda, Sesotho and other African languages makes computers more accessible. With translated software, “these languages are suddenly players in the modern world.” Neville Alexander, a former South African freedom-fighter, agrees. “An English-only or even an English-mainly policy necessarily condemns most people, and thus the country as a whole, to a permanent state of mediocrity, since people are unable to be spontaneous, creative and self-confident if they cannot use their first language,” he says.

A similar approach is being taken in India, where there are 18 official languages and over 1,000 regional dialects. Shikha Pillai is one of the leaders of a team in Bangalore that is translating open-source software, including OpenOffice, into ten Indian dialects. She, too, feels that introducing Indian languages will help to foster a far deeper penetration of information technology. “Localisation makes IT accessible to common people,” she says. “And Indian-language enabled software could revolutionise the way our communications work; even the way computers are used in India.”

In May, Thailand's government launched a subsidised “people's PC” that runs LinuxTLE, a Thai-language version of Linux. In September, Japan said it would join a project established by China and South Korea to develop localised, open-source alternatives to Microsoft's software. Computer users around the world are discovering that open-source software speaks their language.

AP

Open source opens doors

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MONITOR

A squirt in the eye

Dec 4th 2003
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Retinal implants: Technology borrowed from inkjet printing could help people blinded by retina-wasting diseases

RESTORING sight to the blind—it sounds more like the stuff of religious miracles than technological research. Yet that is the much-hyped promise held out by retinal implants, tiny devices that may some day be able to restore the vision of people blinded by retina-wasting diseases such as retinitis pigmentosa and macular degeneration. The reality, however, is that many hurdles still have to be overcome first.

One key problem is that of connecting the implant, which is inserted into the eye, with the patient's nervous system. There are various ways to do this, but all of them are electrical. Once the implant is in place, visual information is captured using a light-sensitive chip, much like that found in a digital camera. This information is then transmitted to the remaining healthy cells in the retina by stimulating them electrically, thus mimicking the action of the light-sensitive photoreceptors that have been damaged by disease.

Although this works, it is not very precise, because even the smallest electrodes are too large to stimulate the retinal neurons (which transmit signals back to the brain) on a one-to-one basis. Furthermore, the electrical signal tends to be leaky, with the electrode stimulating too many adjacent cells. Another problem is that too much electrical stimulation can lead to cell damage, says Harvey Fishman, an opthalmologist at Stanford University in California.

Having tried various forms of the electrical approach, Dr Fishman and his colleagues now believe they have a better way: they plan to use inkjet nozzles. Rather than zapping the retinal neurons electrically, the idea is to stimulate them chemically, using tiny squirts of the chemical neurotransmitters that are normally produced by healthy photoreceptors. By precisely controlling the types of neurotransmitter and the timing of their ejection, Dr Fishman believes it should be possible to restore much of the retina's function. Moreover, this chemical approach has the potential to be more selective than the electrical one, by allowing individual cells to be stimulated, rather than hundreds simultaneously.

This matters because the retina does more than simply relay light signals directly to the brain. It also does some basic image processing, such as edge detection and motion detection, though exactly how this works is still poorly understood. But since different neurotransmitters produce different types of neuronal response in cells, it may be possible to mix and match different neurotransmitters to harness some of this subtle pre-processing, says Dr Fishman.

His team set out to demonstrate that neurotransmitters could be dispensed precisely enough, and to see how neurons would respond to the resulting squirts. The researchers adapted a standard 48-nozzle inkjet cartridge, made by Epson, to fire a neurotransmitter at a culture of rat neurons. In a paper published recently in *Biomedical Microdevices*, they reported that they were able to trigger the cells so that the pattern of activated cells formed the letter A.

Inkjet cartridges are ideal, says Dr Fishman, because they use a piezo-electric process to squeeze the fluid out. This is preferable to microfluidic devices that use heat to control fluid flow, since heat can cause the neurotransmitter chemicals to break down. It also allows for fine control of the amount of fluid emitted: with an off-the-shelf cartridge it is possible to limit the output of molecules to as few as 5,000 per squirt, the amount produced by a real photoreceptor.

But the cartridge's aim must be improved in order to enable it to trigger individual neurons. Having dispensed with their used printer cartridge, the researchers are now building a dedicated new 10,000-

pixel device from scratch. By reducing the nozzle size from 20 millionths of a metre to two millionths, they hope they will be able to attain the required accuracy.

It is a wonderful idea, if it can be made to work, says Eberhart Zrenner, director of the University Eye Hospital in Tübingen, Germany. But there may be a catch. Neurotransmitters can be toxic to cells, and could damage the eye if not administered properly. Dr Zrenner, who continues to pursue electrical stimulation in the development of retinal implants, believes this toxicity could be a real problem for chemical stimulation.

Anyone who has run out of ink half way through printing a document might also raise another objection: how often would the neurotransmitter reservoir need to be replenished? Not very often, it seems. Dr Fishman's team has calculated that an implant with a thousand nozzles, firing a thousand times a second, would still be able to make a reservoir containing a fifth of a millilitre of fluid last for 50 years—reassuringly longer, in other words, than the inkjet cartridges that inspired their novel new approach.

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MONITOR

Computers that read your mind

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Computing: Researchers have developed a promising new way to control computers by thought alone

LIFT your left hand. Did you know that your brain was preparing for that movement a full half-second before it actually took place? Even more spookily, your mind knew which hand it was going to lift before you made the conscious decision to lift it. Computer scientists at the Fraunhofer Institute for Computer Architecture and Software Technology (FIRST) in Berlin, working with neurologists from the Benjamin Franklin University Clinic, also in Berlin, have been studying this phenomenon. They believe it could provide a promising new way to control computers by thought alone.

Indeed, volunteers at FIRST are already playing Pac-Man, racing games and video tennis without touching a keyboard or joystick. Instead, they are fitted with an electroencephalograph (EEG) and, simply by thinking about it, they are able to move objects around a computer screen. In the field of brain-computer interfaces (BCI), this is revolutionary, in two respects. First, the volunteers need only a small amount of practice before they can use the system—most brain-computer interfaces require about 200 hours of training. Second, the interface is non-invasive, and merely relies on electrodes stuck on to the skin.

Brain waves can be measured by an EEG in one of two ways: “averaging” and “single trial”. According to Klaus-Robert Muller of FIRST, the “beautiful” brain waves seen in physiology textbooks are produced by taking hundreds of samples of brain waves recorded whilst performing a single task—listening to someone whistle, say—and then averaging them to produce a clear, idealised example.

A useful BCI device, however, must be able to determine the subject's intention from a single brain-wave reading. For real-time applications, averaging hundreds of readings simply won't work. But the problem with such single-trial readings is that they are very difficult to interpret, because of the background noise produced both by the brain and by the EEG equipment.

This noise can be filtered out by averaging hundreds of recorded brain waves. But the FIRST team is investigating how to filter it out from single-trial readings. They have developed a program that filters out the noise in much the same way that the human brain's reticular activating system filters out most of our sensual stimuli, and only passes on the information we need to function and survive. Without this system, we'd be drowned in a sensory overload.

But while the early trials of this filtering technology look promising, there are several obstacles that the researchers need to surmount before their product can be commercialised. An EEG is much cheaper and more portable than other brain-imaging technologies (such as magneto-encephalograph and functional magnetic resonance imaging), but it is still not cheap or robust enough to be sold as a gaming device or a computer peripheral. Furthermore, it takes an expert about 45 minutes to attach a 128-electrode EEG to someone's head. Worse, it also requires the use of conductive gel, which hardly makes for a consumer-friendly product.

“So we need EEGs where you don't need the gel,” says Dr Muller. “You put some electrodes in a baseball cap and you have a wireless downlink. But there is still a hardware problem. Brain signals measured non-invasively, and without gel, have very small voltages. So you need a powerful low-noise amplifier.” The team's next step will be to develop just such an amplifier, in conjunction with commercial partners.

But if a cheap, efficient EEG can be made, the potential applications are boundless. Paralysed people

could move a cursor around a screen and type messages. The entertainment industry could develop a whole new range of video games. Car manufacturers might even develop vehicles that integrate the driver's thoughts with the braking or steering system. In a crash, that half-second could be the difference between life and death.

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MONITOR

The internet, on wheels

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Networking: New initiatives are extending the range of the internet in an unusual way—by road

Keep on clickin'

IT IS supposed to be an “information superhighway”, but as with real highways, there are still places where the internet, and its many benefits, have not reached. To extend its range, a number of projects are now exploiting the existing and far more extensive road network—in effect, putting the internet on wheels.

The Internet Bookmobile, as its name suggests, drives around printing books on demand, downloaded from the internet. The brainchild of Brewster Kahle, a software entrepreneur who did fairly well out of the internet bubble, the Bookmobile is a minivan outfitted with a satellite-based internet connection, a PC and a high-end printer made by Hewlett-Packard. One such Bookmobile has driven the length and breadth of America, printing out some 10,000 books, mostly copies of “Alice in Wonderland” and other popular books now in the public domain and available in electronic form online.

The Internet Bookmobile can also function like an on-demand library in other ways, providing music downloads, access to periodicals and other types of content, as well as standard e-mail and web access. This concept has been slow to catch on in internet-saturated America, though Mr Kahle remains hopeful. But it has drawn interest in other parts of the world. In India, the government plans to create 30 Bookmobiles of its own, two of which are already on the road. Egypt's Library of Alexandria has outfitted one. And in October, Mr Kahle's Anywhere Books project launched an Internet Bookmobile in Uganda, with the help of funding from the World Bank.

Mr Kahle jokes that his Bookmobiles are “just a mobile last-mile solution”, referring to the notoriously difficult process of bringing high-speed internet access directly into homes in the rich world. But in many cases the Bookmobiles are operating in areas that have limited access to the internet, or none at all.

Meanwhile, IdleAire Technologies, a start-up based in Knoxville, Tennessee, has begun outfitting America's truck stops with systems to pipe the internet, along with television, power and other services, into parked trucks. American regulations specify that truckers must stop after ten hours of driving and rest for at least eight hours. Truckers with perishable cargo must keep their trucks running, because the

engines also power their refrigerated trailers. This is noisy and environmentally wasteful. IdleAire's service modules provide electrical power to keep trailers cool without having to run the engine, along with other services.

By the end of this month, IdleAire will have outfitted 16 truck stops with its service modules, which provide internet access for $1.50 an hour (or, for truckers who carry their own laptops, $3 a stay), telephone service based on the voice-over-internet protocol, television service and even movies on demand. It is also installing Wi-Fi wireless access points, so tech-savvy truckers can take their trusty laptops into the lounge. Within the next five years, IdleAire hopes to outfit 4,000 truck stops and 300,000 parking spaces. The company has struck deals with large haulage firms, and its service is now used by 40,000 truckers. Tom Badgett, IdleAire's co-founder, says ambulance drivers and campers use the service too.

But perhaps the cleverest plan to put the internet on wheels comes from India. At “The Future in Review”, a wide-ranging technology conference held in San Diego earlier this year, Allen Hammond of the World Resources Institute, an environmental think-tank, outlined a cunning scheme to provide e-mail access in rural India using buses. Each bus would be equipped with an e-mail server and a high-power Wi-Fi base-station, with a range of a mile or so. This communicates with nearby computers in homes, schools, offices or post offices, delivering and collecting e-mail wirelessly as the bus drives past, so that there are a handful of deliveries and collections each day. The buses connect to the internet when they reach the depot at the end of the line. Given the reach of the bus network, it is estimated that this approach could provide national e-mail coverage for a paltry $15m. E-mail by bus—why not?

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MONITOR

Thigh, robot

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Medical devices: Today's mobility aids could soon be replaced by smarter, more active ones

PEOPLE who have suffered debilitating strokes often have to cope with impaired muscles that do not work properly. Even a simple act such as standing up from a chair and walking a few steps can become extremely difficult. Stroke victims often have to rely on wheelchairs, sticks, walking frames and other “orthotic” devices to move about.

But a new generation of active orthotic devices, capable of augmenting or replacing lost muscle function, is in the works. These devices use an assortment of complex computer and mechanical technology, borrowed from the field of robotics, to help patients get around. They are being made possible by the falling prices and improving performance of sensors, computer control systems and battery technology.

As well as benefiting elderly patients with permanent paralysis or muscle dysfunction, such devices could also help people recovering from “arthroscopic” (literally, “looking within the joint”) operations. Around 850,000 arthroscopic and knee replacement operations are carried out each year in America alone, and patients require an average of six weeks of rehabilitation before they are fully mobile again. Active orthotic devices could get them back on their feet sooner.

Designing such devices presents a number of challenges. The biggest problem is providing enough power to assist the wearer, without making the device too bulky and heavy. Another challenge is devising a responsive and unobtrusive control system that can take readings from several sensors and automatically respond to the wearer's motion by making appropriate movements.

Several start-ups are, however, rising to the challenge and readying products for market. Among the firms developing active orthotic devices is Tibion, based in Moffett Field, California. It has developed the PowerKnee, a medical device that augments muscle strength in the quadriceps to help the wearer stand, walk and climb stairs.

The device is based on recent advances in portable computing, embedded systems, prosthetics and materials, and Tibion expects it to be submitted for regulatory approval next year. America's space agency, NASA, has expressed interest in it, since muscle-augmentation systems might enable astronauts to work in space for longer without getting tired.

Another company working in this area is Yobotics, based in Boston, Massachussetts, which has developed a powered device called the RoboKnee. It allows a healthy wearer to perform deep knee-bends indefinitely—or, at least, until the batteries run out. This is intended to be a first step towards the development of a far more elaborate exoskeletal device, the RoboWalker, which will augment or replace the muscular functions of the lower body.

Also working on active orthotic devices is Hugh Herr of the Massachusetts Institute of Technology (MIT). His team has designed an ankle brace to assist people with “drop foot”, who are unable to lift their feet normally when walking, because of weakened or damaged muscles around the ankle. The battery-powered device, which uses a motor to help raise and lower the front of the foot as the heel strikes the ground and lifts again, is about to begin testing on patients.

Also at MIT, Woodie Flowers, a mechanical engineer, is developing an active joint brace that is designed to function like an active exoskeleton. Perhaps the best-known example of such a device is the exoskeleton seen in the film “Aliens”, which allows the wearer to move heavy objects around, rather like

a fork-lift truck. This kind of technology may not, it seems, remain in the realm of science fiction for much longer.

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MONITOR

How to bake the perfect chip

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Semiconductors: A new rack for baking silicon chips keeps them clean and improves productivity

WHEN you bake cookies, it is important to ensure that your cooking equipment is not contaminated with other foodstuffs—garlic, say—that might taint the final product. The same is true, on an altogether different scale, when making silicon chips. The standards of cleanliness required in a chip factory, or fab, far exceed those of even the fussiest chef. Fabs have costly filtering and vacuum systems to keep dust particles away from the chips. But another source of contamination comes when the silicon wafers, each containing dozens of chips, are placed on quartz racks in hot ovens and baked—one of the many stages in the complex chip-making process.

The high temperature in the oven (around 1,000°C) causes the quartz rack, which resembles a vertical household CD rack, to release tiny quantities of contaminants, such as dust and oxides, into the air. These particulates can stop a chip from functioning if they land on one of its components—a problem that becomes more acute as chips and their constituent components get smaller and smaller. Repeated heating and cooling also causes the quartz rack to flake, weakening its structure and releasing more particulates.

A further problem is that quartz expands less than silicon when heated. This induces stresses in the heavy silicon wafers as they sit on the quartz rack and causes atoms in the wafers to move slightly. Such “slip” is a further cause of chip failure. Finally, the large 300mm wafers now used in the most modern fabs are very heavy, and a quartz rack loaded with 100 such wafers may unexpectedly collapse. Such failures are rare, but are very costly when they do occur.

To overcome these problems, Integrated Materials Incorporated (IMI), a start-up based in San Jose, California, has designed and built an improved rack made from silicon, rather than quartz. Unlike quartz, which contains impurities such as heavy metals which are released when it is heated, the silicon used to make the new racks is as pure as that used in the wafers being processed. Since it is made of the same material, this means the rack expands and contracts at exactly the same rate as the wafers, reducing stress and slip. The new silicon rack is also thermally stable, and can be used at temperatures as high as 1,350°C without warping or weakening.

Semiconductor-equipment manufacturers tried to make racks out of silicon in the 1970s, but found that it was not rigid enough. Since then, incremental improvements in silicon manufacturing have enabled IMI to overcome this problem and produce racks that are highly resistant to chipping and breakage. Silicon was also spurned in favour of quartz in the past because it was far more expensive. That is still the case: each of IMI's silicon racks costs $28,000, compared with $7,500 for a quartz one. But the overall cost, says the company, is now lower. Its new silicon racks last much longer, since unlike quartz racks, they are not weakened by repeated heating and cleaning. On average, a silicon rack accommodating 40 runs a week can be used for between 12 and 18 months, during which time 18 quartz racks, costing a total of $135,000, would be needed.

And, of course, the new racks improve yields, since there are fewer contaminants, less slip, and less risk of an unexpected collapse. What is more, the silicon racks can be made to much higher tolerances than quartz ones. This means that when a rack is replaced, the robots that automatically load and unload the wafers before and after baking need little or no “re-teaching”, since the new rack's dimensions precisely match the size and shape of the old one.

Chip-making is very competitive, so any opportunity to cut costs and improve yields is highly prized. The smart cookies at IMI are now in the final stages of testing their new silicon racks with chip-makers

including Samsung and Sharp.

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MONITOR

Measuring the data mountain

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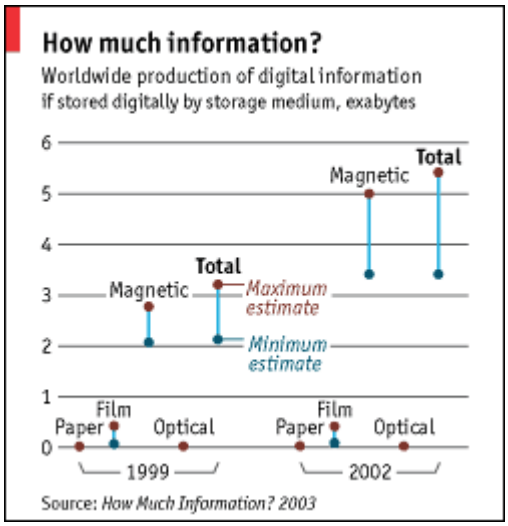
AROUND five exabytes (5 billion gigabytes) of information was created in 2002, up from around two exabytes in 1999, according to the latest "How Much Information?" survey produced by the School of Information Management and Systems at the University of California in Berkeley. This is equivalent to half a million libraries the size of America's Library of Congress, or about 800 megabytes per person per year.



Almost all new information (92%) is stored on magnetic media, primarily hard disks. Most of the rest of the information was generated in the form of still and moving film images. The researchers included this in their total by calculating the amount of disk space that would be needed to store the resulting images in digital form. Paper-based information and optical media (CDs and DVDs) bring up the rear.

Overall, the amount of information being produced is growing by 30% a year. America is the single largest producer, producing around half of the new information on magnetic and optical media, and a third of the paper-based and film-based information.

The researchers, led by Peter Lyman and Hal Varian, also estimated the volume of information flows through electronic channels, such as telephone calls, radio and television transmissions, and internet traffic. They came up with a total of 18 exabytes, of which phone calls accounted for 98%. Because of the difficulty of estimating such figures, however, all of their numbers have wide margins of error.

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MONITOR

Not to be sniffed at

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Chemical sensors: When it comes to detecting chemical weapons, chopping molecules up with a laser may make them easier to find

FINDING a needle in a haystack is hard, but spotting a molecule on a battlefield is even harder. When it comes to detecting chemical-weapon attacks, the most common approach in use today is known as ion-mobility spectrometry. This involves zapping the particles floating in a sample of air with electrons from a radioactive source, so that they become electrically charged. The charged particles are then timed as they are drawn through a filter. The heaviest (and potentially most dangerous) molecules move the slowest. When such molecules are spotted, the alarm is sounded.

The problem with ion-mobility spectrometry is that it is not very good at distinguishing between different types of large molecule. Diesel fuel, cigarette smoke, detergents and pesticides all contain heavy molecules in the same range. That means that current chemical-weapons detectors can sound both false positives, which are expensive and frustrating, and false negatives, which are potentially fatal.

Robert Levis, a chemist at the Centre for Advanced Photonics Research at Temple University in Philadelphia, believes that he and his colleague Herschel Rabitz, of Princeton University, have come up with a better solution. Building on the separate research efforts of Kent Wilson, another chemist at the University of California in San Diego, and Gustav Gerber, a physicist at the University of Würzburg in Germany, Dr Levis and Dr Rabitz are using lasers in a novel fashion. Their new detector, which is now being turned into a commercial product, uses extremely intense laser pulses to break up incoming molecules into smaller pieces.

Dr Levis found that specific types of pulses tend to break up specific molecules in a specific way. The system figures out which chemicals are present by running through a number of pulses of different types that are known to break up chemical agents in predictable ways, and then identifying the resulting fragments.

A good analogy for this process, says Dr Levis, is to compare the laser pulses to music. Each type of molecule responds to a certain type of pulse, but not to others, just as people respond to their favourite type of music, but not to musical genres they dislike. “You can find a combination of frequencies of laser light that turns on a given molecule and makes it dance in a very specific way,” says Dr Levis. Given a specific chemical target, a process of trial and error can identify the right type of pulse to make even the deadliest chemicals jump.

The musical analogy is apt, since each laser pulse, like a snippet of music, is made up of many different frequencies. Certain components of these “shaped” pulses act rather like enzymes in a chemical reaction: they create an environment that allows other, simultaneous reactions to proceed more easily than they otherwise would. The result, Dr Levis says, is a process that should allow chemical identification within five minutes, with far more reliability than existing systems.

The new laser-based detector has attracted interest from America's army and navy, and from the National Science Foundation. A unit the size of a large suitcase could be ready for use as soon as early 2005, says Dr Levis.

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Windows with a grand vision

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Telecommunications: An Austrian firm has a wacky plan to install pan-European virtual reality

How a united Europe might look

REMEMBER when people started setting up web-connected cameras, or webcams? Suddenly you could log on to the internet and watch people in downtown Ulan Bator lurch around in real time. Now the world is about to shrink again. A giant video-conferencing suite, called a Tholos, could be arriving in London and Vienna next spring—provided planning permission is forthcoming.

The Tholos, named after a Greek temple from the Mycenaean period, is a 3-metre high, 360-degree screen that sends and receives images between two locations, in effect providing a window between the two cities. If you're in London, you'll be able to walk up to the screen and have a chat with someone in Vienna, as though you were meeting in the town square. A panoramic view of the other city will be visible in the background, and it will always be on.

This elaborate project was devised by Tholos Systems, a company based in Vienna. It incorporates the latest high definition television (HDTV) technology, with rear projection, high-resolution cameras, and specially coated screens to prevent graffiti. But it's not all 21st-century technology. The Tholos also uses a projection technique borrowed from a device over a century old: the zoetrope. The mechanical shutters in front of the HDTV equipment will switch between a camera facing outwards and a projector showing an image from the distant city. As in a zoetrope, these shutters operate at a high speed that makes the switching invisible to the human eye.

Each Tholos has five cameras and five projectors, and each camera will be connected via a high-speed fibre-optic link to the respective projector in the second location. This ensures a judder-free image at the other end. The roof of the Tholos houses the audio system: 22 directional microphones and loudspeakers will create “sound-cones” around the Tholos to enable private conversations to take place between people in different cities.

The system was dreamed up by the company's head of research, Andreas Traint, nearly four years ago. The company has since built four prototypes at its headquarters in Vienna, but the full-sized versions, expected to cost *euro*2m ($2.4m) each, have yet to be constructed.

The aim is to provide use of the Tholos booths to the public free of charge, with running costs funded by advertising and sponsorship, since the same system can be used to display large, walk-around images. During a car advertisement, for example, bystanders would be able to inspect a new car from every angle. The current plan is to use an eighth of the airtime to display advertisements. Tholos Systems hopes to install the booths in 16 European cities by 2008, and is currently in discussion with potential sponsors in Paris, Rome, Warsaw, Copenhagen and other cities. Michael Brezina, the firm's boss, hopes the invention will bring about “the materialising of the vision of the European Union.” That might be a bit much to ask of a glorified webcam.

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A kinder, gentler Frankenfood

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Genetic modification: Might a clever technological twist help to make GM foods more widely acceptable?

FEW technologies are currently as controversial as genetically modified (GM) crops. Critics, particularly in Europe, object to them on many grounds. A common objection is that they are unnatural, because they often involve the transplantation of genes from entirely different species to create “Frankenfoods”. Genes from brazil nuts and petunias have been inserted into soybeans, daffodil genes in rice, and potato genes in maize (corn). Joachim Messing of the Waksman Institute of Microbiology at Rutgers University in New Brunswick, New Jersey, does not share most of the worries harboured by critics of GM foods. But he believes that a different approach to genetic modification might help to ease public concern.

A less controversial approach, he suggests, would be for scientists to place more emphasis on studying the target crop, so that researchers can locate genes within the plant itself, or from its close relatives, to tweak as needed. This approach, he suggests, would marry public acceptance of trial-and-error cross-breeding with the benefits of GM.

Dr Messing has already started along this road. For years, he and his team have studied maize. Their efforts have produced a detailed knowledge of the plant's properties. Among other things, they discovered that by adjusting the “flanking sequences” preceding and following certain genes, it is possible to increase or reduce the production of the proteins for which those genes provide the blueprints. One gene of special interest, called Dzs10, produces a protein that regulates the storage of methionine, an amino acid that is crucial to human and animal diets, and helps to keep the hair, skin, liver, kidneys and bladder healthy.

Normally, maize, which is an important crop for livestock feed, has low levels of methionine. Farmers typically have to add chemically synthesised methionine to their animal feed in order to keep their herds healthy. If methionine levels could be boosted in the plant itself, this would be unnecessary, and the maize would be more nutritious for people, too. Using common genetic-engineering techniques, Dr Messing and his colleague Jinsheng Lai did just that, adjusting the flanking sequences around the Dzs10 gene to increase the amount of methionine being stored. Their research was published last year in the *Plant Journal*. Dr Messing contends that increasing methionine levels by fine-tuning the maize genome is no scarier than adding iodine to salt or Vitamin D to milk.

Michael Hansen of the Consumers Union, a consumer advocacy group, says Dr Messing's approach sounds promising. But, he says, such engineering feats still require careful scrutiny to ensure they are safe. In the past, he says, the insertion of genetic sequences has been known to cause inadvertent harmful effects, even when the genetic sequence was taken from the same organism. In one example in the mid-1990s, says Dr Hansen, a rejigging of genes in yeast caused an unexpected increase in the level of a toxin called methylglyoxal.

As an extra precaution, Dr Messing's team followed their modified gene for five generations and tested its nutritional value with animals directly. They found that the animals could receive sufficient amounts of methionine without having to rely upon synthesised sources, and they found that birds showed no obvious change in appearance or health. But Dr Hansen argues that subtle changes could emerge generations later, so strict testing and labelling is still needed.

Meanwhile, Dr Messing is working with a group affiliated with the Philippine government. This group is attempting to combat tungro, a viral disease that kills rice—a staple crop throughout Asia. Dr Messing

hopes he will be able to find an existing rice gene that can, with a little prompting, fend off the virus.

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MONITOR

Out of sight

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Materials: A transparent magnet could be used to make new kinds of computer memories and displays

ELECTRONIC devices with transparent cases that reveal their innards, from computers to radios, were briefly fashionable a few years ago. But while transparency can be trendy in high-tech products, it might also be useful. A transparent computer memory, for example, could be accessed by a laser beam, which could probe to varying depths. A Spanish research team headed by Martí Gich of the Barcelona Institute of Materials Science is now taking the first steps towards such a memory. The same technology could be adapted for use in a computer display that would retain an image even when the power is turned off.

Dr Gich and his team announced their results in a recent paper in *Applied Physics Letters*. Technically, they have succeeded in creating the first transparent magnetic aerogel with “high coercivity”. Aerogels are among the lightest solids in existence, while coercivity is a measure of how strong the magnetisation of a magnet is—a magnet with low coercivity easily flips polarity, and so would not be useful in a memory or a display.

Aerogels are commonly made of silica, the main ingredient in sand. They can be made by rapidly cooling a solution of water, ammonia, methanol and a substance called tetramethoxysilane in an atmosphere of carbon dioxide gas at very high pressure (80 times normal atmospheric pressure). Because of the high pressure, the gas forces itself into the interstices of the solution, which, after its constituents have been mixed, is already a normal gel. The resulting aerogel is clear, with a low refractive index, meaning that light bends very little when it enters the gel from the air—a desirable quality for both memories and displays.

However, a pure aerogel is no use for either of these applications, as it cannot be magnetised. So materials scientists have, for the past 15 years or so, tried to make magnetic aerogels by mixing some magnetic molecules into the solution. What is difficult is stirring in enough magnetic molecules for the resulting aerogel to be useful without disrupting the formation of the aerogel or rendering it opaque. Dr Gich obtained the desired results by mixing in various concentrations of iron alloyed with neodymium and boron. The various steps involved in successfully making an aerogel out of these ingredients read like a witches' brew: one step involves ageing the gels in a methanol solution for ten days.

The result, though, is that the iron impurities in the aerogel show up as little needles whose direction can be flipped by an external magnetic field. Because light consists of alternating magnetic and electric fields, a properly polarised laser could be used to do the job. The orientation of these needles can then be used to store information. Data could be read out of the memory by bouncing a lower-powered laser off the needles to reveal their orientation without changing it. To use the aerogel as a display, external magnetic fields would be used to flip the needles back and forth. In one position they would let polarised light pass through the aerogel, and in the other position they would block it.

But a crystal-clear laptop remains far off. Dr Gich's aerogels currently exist only in test tubes. They may be transparent, but when or indeed if they will make it to the marketplace is rather less clear.

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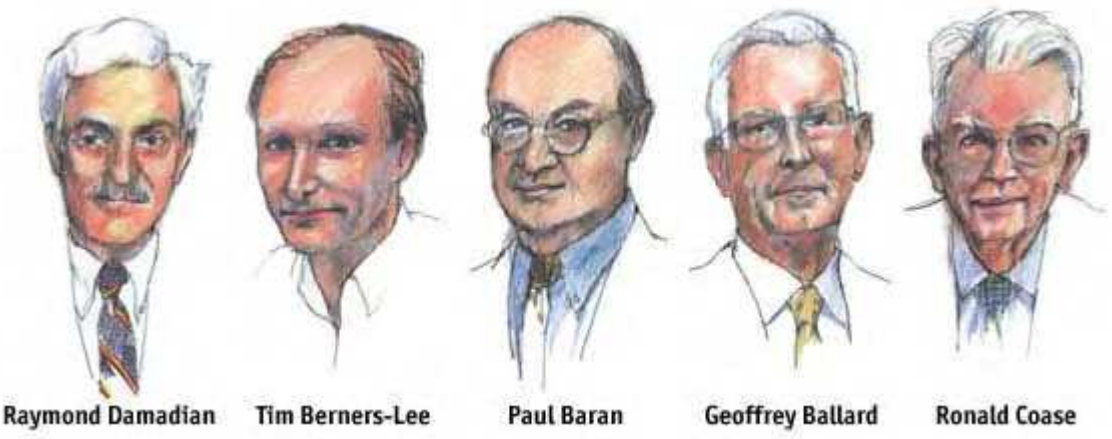
MONITOR

And the winners were...

Dec 4th 2003
From The Economist print edition



Innovation Awards: Our annual prizes recognise innovators in five technology categories. Here are this year's winners

THIS newspaper was established in 1843 to take part in “a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress.” One of the chief ways in which intelligence presses forward is through innovation, which is now recognised as one of the most important contributors to economic growth. Innovation, in turn, depends on the creative individuals who dream up new ideas, and then—often with great difficulty—turn them into reality.

The Economist recognises these talented people through our annual Innovation Awards, presented in five fields of technological endeavour: bioscience, computing, telecoms, energy and a special “no boundaries” category. This year's awards were presented at a ceremony in San Francisco on September 23rd. And the winners were:

• Bioscience: **Raymond Damadian**, president and chairman of FONAR. Dr Damadian first proposed the idea of using the principle of **nuclear magnetic resonance** (NMR) as an “external probe for the detection of internal cancer”. In 1970, he found that cancerous tissues could be distinguished from healthy tissues using NMR. He went on to build the first prototype for a whole-body magnetic-resonance scanner and produced the first image of a human chest on July 3rd 1977. Now in widespread use, magnetic-resonance imaging (MRI) technology has saved hundreds of thousands of lives. The question of who most deserves the credit for its invention, however, remains controversial (see article).

• Computing: **Tim Berners-Lee**, director of the World Wide Web Consortium. In 1989, Mr Berners-Lee proposed a scheme to enable electronic documents to link to other documents stored on other computers. This idea, which later grew into the **world wide web**, started out as a program called Enquire, which Mr Berners-Lee wrote for his own use while working at CERN, the European Particle Physics Laboratory in Geneva, Switzerland. He went on to write the first web browser and web server, both of which he gave away on the internet, along with details of the protocols to describe and transmit web pages. Today the web consists of billions of pages and is used by hundreds of millions of people.

• Telecoms: **Paul Baran**, co-founder, the Institute for the Future. In 1959, Dr Baran began to think about ways to make America's communications infrastructure resistant to a nuclear attack. He proposed using a system called “distributed adaptive message block switching”, known today as **packet**

switching. This involves breaking digital information into small chunks, or packets, and sending them separately over the network, thus doing away with centralised switching centres and enabling the network to work even when partly destroyed. His idea was initially ignored and was only given its first proper test in 1969, when it was used as the basis for ARPANET, an experimental computer network that later grew into the internet.

• Energy: **Geoffrey Ballard**, chairman, General Hydrogen. In the late 1970s, Dr Ballard began research into **fuel cells** as a means of addressing the problem of smog in large cities. Fuel cells combine stored hydrogen with oxygen from the air to generate electricity, water vapour and no harmful emissions. Modern fuel cells are expected to power a new breed of electric vehicles, by overcoming the cost, size and weight limitations of batteries. In 1979 Dr Ballard co-founded Ballard Power Systems to develop, commercialise and market fuel cells. The firm now has partnerships with companies including DaimlerChrysler and Ford, and has supplied fuel cells to Honda, Mitsubishi, Nissan and Volkswagen.

• No Boundaries: **Ronald Coase**, professor emeritus of economics, University of Chicago Law School. In papers published in 1959 and 1960, Dr Coase asked why valuable radio spectrum was going to waste. He suggested that the problem was the lack of **private property rights over spectrum**, which prevented the formation of a market to allocate spectrum efficiently. The answer, he proposed, was to open the allocation of radio spectrum to market forces. His proposal was derided, but radio spectrum is now routinely allocated by auction, and his idea helped to create novel markets in other fields, such as tradeable emissions permits to limit pollution.

We extend our congratulations to the winners, and our thanks to the judges: **Nick Valéry**, former *Technology Quarterly* editor, *The Economist* (chairman); **Denise Caruso**, executive director, the Hybrid Vigor Institute; **Martin Cooper**, chairman and chief executive, ArrayComm; **Glover Ferguson**, chief scientist, Accenture; **François Grey**, professor of nanotechnology, Technical University of Denmark; **Leroy Hood**, president and director, Institute for Systems Biology; **Henry McDonald**, chair of Excellence in Computational Engineering, University of Tennessee SimCentre at Chattanooga; **Louis Monier**, director of advanced technologies, eBay; **Shuji Nakamura**, director, Centre for Solid State Lighting and Displays, University of California, Santa Barbara; **Andrew Odlyzko**, professor of mathematics and director, Digital Technology Centre, University of Minnesota; **Tim O'Reilly**, founder, O'Reilly & Associates; **Rinaldo Rinolfi**, executive vice-president, Fiat Research; **Paul Romer**, professor of economics, Graduate School of Business, Stanford University; **Paul Saffo**, director, the Institute for the Future; **Ludwig Siegele**, Berlin correspondent, *The Economist*; **Vijay Vaitheeswaran**, energy correspondent, *The Economist*; **Carl-Jochen Winter**, professor of energy and engineering, University of Stuttgart.

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MONITOR

Changing the game

Dec 4th 2003
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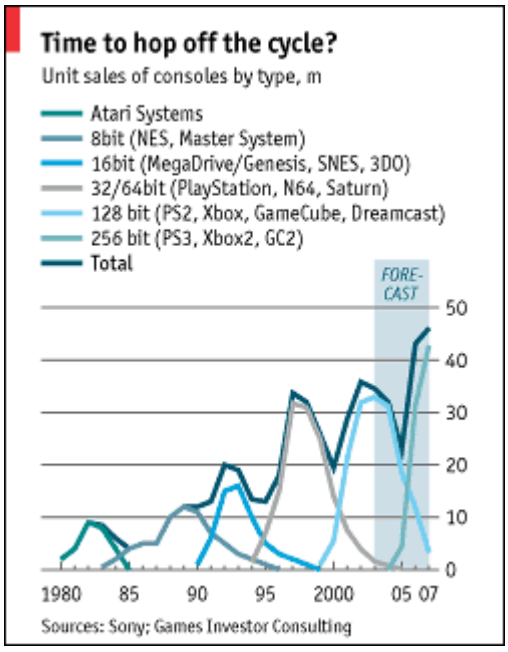
Consumer electronics: Our new column on the business and technology of consumer devices looks at the changing dynamics of the video-gaming industry

SOMETHING funny is going on in the video-gaming business. Sony, the market leader, is changing the technological and business rules that have defined this cut-throat industry for two decades. By doing so, it hopes both to improve its fortunes—earlier this year the company admitted that its revenues and profits had unexpectedly plunged—and to fend off a challenge from Microsoft, which launched its first games console, the Xbox, in 2001. Though motivated by Sony's self-interest, these new rules are also good news for consumers, whether they are seasoned gamers or occasional players, since they impose some stability on a volatile and cyclical industry.

The existing rules are simple: every five years or so, console-makers release new consoles that are far more powerful than the previous generation. The current crop consists of Sony's PlayStation 2, Microsoft's Xbox and Nintendo's GameCube. The PlayStation 2, launched in March 2000, is the most successful by far, with over 60m units sold, compared with around 15m units each for the Xbox and GameCube. Just as shaving companies make money on blades rather than razors, the industry works by selling consoles at knock-down prices and making a profit on the games. A game typically costs $50, around $10 of which is passed from publisher to console-maker as a licence fee.

The result is a regular “console cycle”, as one generation succeeds the next (see chart). At the end of each cycle, gamers abandon their old consoles and buy new ones, and the whole process starts again. Games written for one console do not work on another, so they also have to buy a completely new set of games. But since each new console cycle offers a great leap forward in computing power, gamers are prepared to play along.



Console-makers like the cycle too, since it isolates them from the broader economic climate. The current gaming boom occurred despite a wobbly American economy; the last but one, in 1991-93, came amid a global recession. Console-makers also like it that with each cycle, the playing field is levelled, and the industry in effect starts again from scratch. Microsoft entered the market in the current cycle with its Xbox; its model was Sony, which had launched its first console, the PlayStation, in the previous cycle.

But Sony has changed the rules, by subverting this state of affairs in three ways. First, it made its PlayStation 2 console “backwards compatible” with the original PlayStation—in other words, games written for the old console also work on the new one. This gave PlayStation owners an incentive to remain loyal to Sony from one cycle to the next. By choosing a PlayStation 2, rather than an Xbox or GameCube, they could protect their existing investment in games. Sony says this policy of backwards compatibility will be maintained when the PlayStation 3 appears in 2005 or 2006: it will be able to run games designed for previous consoles. Since each generation is so much more powerful than the last, this trick is relatively easy to pull off by getting a console to impersonate, or emulate, its less powerful predecessors.

Next, Sony did not kill off the PlayStation when it launched the PlayStation 2, but instead cut its price and aimed it at new, more price-sensitive markets. In 2002, Sony sold 20m PlayStation 2s and 4m PlayStations—compared with sales of about 6m each for the Xbox and GameCube. In other words,

successive console cycles are starting to overlap.

Sony's third move is intended to extend this trend still further. It has just launched the PSX, a home-entertainment device that combines a PlayStation 2 with a DVD recorder, a hard-disk based video recorder, satellite and analogue TV tuners, and photo-album and music playback features. As well as cutting down on spaghetti-like wiring behind the TV, this jack-of-all-trades is the first example of Sony's new strategy to combine its games consoles with other consumer-electronics devices. By throwing in PlayStation 2 functionality with other devices at a small premium—made easier by Sony's recent cramming of a PlayStation 2 on to a single chip—it hopes to broaden the market and appeal to people who would not normally dream of buying a stand-alone games console. “Once they get it down to a single chip, then economies of scale come in, and the potential for integrated devices becomes very real,” says Nick Gibson of Games Investor Consulting.

Playing to win

Together, these three moves have the effect of damping the industry's cyclicality, maintaining loyalty and widening ownership. They also make life more difficult for Microsoft, which is expected to be Sony's chief rival in the next cycle. The Xbox, which was launched more than a year after the PlayStation 2, could never have caught it up in sales. Instead, it was widely seen as Microsoft's trial run for the next round, in which the Xbox 2 will battle the PlayStation 3 on more equal terms.

Sony's strategy changes that calculation. As the winner of the previous cycle, it has the most to gain by trying to reduce the industry's cyclicality, in order to maintain its dominance. By overlapping console cycles and spreading the PlayStation 2 into a range of other devices, it hopes to make the coming fight between the Xbox 2 and the PlayStation 3 just one front in a larger battle on a wider landscape. Indeed, says Toby Scott of *Games Analyst*, an industry publication, it now makes sense to consider the PlayStation's collective market share across multiple console cycles. Since Microsoft is now under pressure to make the Xbox 2 backwards compatible too, the next cycle will arguably not start from scratch after all.

That does not mean the console cycle is dead. But it will matter less, which is good news for consumers. In the old days when consoles were killed off and there was no backwards compatibility, says Mr Scott, “gamers were the playthings of manufacturers.” The changing dynamics of the industry now mean that buying a console, particularly late in the cycle, is much less dangerous than it used to be. If you buy a console this Christmas, in short, you are much less likely to end up getting stuck with a turkey.

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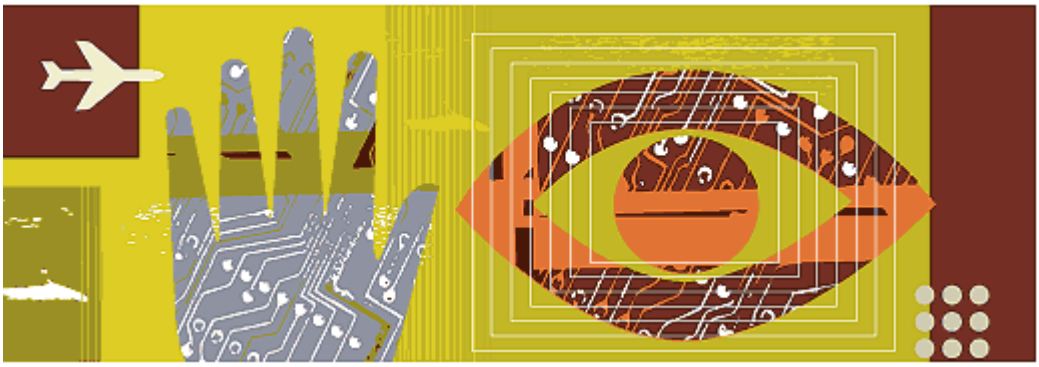
BIOMETRICS

Prepare to be scanned

Dec 4th 2003
From The Economist print edition



Biometrics: High-tech security systems that rely on detailed measurements of the human body, known as biometrics, are taking off. But should they be?

IT HAS been a long time coming. But after years of false starts, security systems based on biometrics—human characteristics such as faces, hand shapes and fingerprints—are finally taking off. Proponents have long argued that because biometrics cannot be forgotten, like a password, or lost or stolen, like a key or an identity card, they are an ideal way to control access to computer networks, airport service-areas and bank vaults.

But biometrics have not yet spread beyond such niche markets, for two main reasons. The first is the unease they can inspire among users. Many people would prefer not to have to submit their eyes for scanning in order to withdraw money from a cash dispenser. The second reason is cost: biometric systems are expensive compared with other security measures, such as passwords and personal identification numbers. So while biometrics may provide extra security, the costs currently outweigh the benefits in most cases.

In the wake of the terrorist attacks of September 11th 2001, however, these objections have been swept aside. After all, if you are already being forced to remove your shoes at the airport, and submit your laptop for explosives testing, surely you will not object to having your fingers scanned too? The desire to tighten security in every way possible, particularly in America, also means the funds are being made available to deploy technology that was previously regarded as too expensive to bother with.

As a result, biometrics are suddenly about to become far more widespread. America will begin using biometrics at its airports and seaports on January 5th. Under the new US-VISIT programme, all foreigners entering on visas will have their hands and faces digitally scanned. This will create what Tom Ridge, America's homeland-security supremo, calls “an electronic check-in and check-out system for foreign nationals”. American citizens will also be affected, as new passports with a chip that contains biometric data are issued from next year. And the new rules specify that by October 26th 2004, all countries whose nationals can enter America without a visa—including western European countries, Japan and Australia—must begin issuing passports that contain biometric data too. Moves to create a European standard for biometric passports are already under way, and many other countries are following suit: Oman and the United Arab Emirates, among others, will begin issuing national identity cards containing biometrics next year. Britain's planned new national identity card will also include biometrics.

In other words, governments either do not believe that the costs of biometrics still outweigh any potential benefits or, more likely, fearing more terrorism they simply do not care. This could be an expensive choice. Recent reports from groups such as the General Accounting Office (GAO), the investigative arm of America's Congress, and America's National Academy of Science (NAS), point out

that, while the political environment has changed, the technology has not. Biometrics still do not work well enough to be effective for many of the applications in which they are now being deployed.

Even John Siedlarz, who co-founded the International Biometrics Industry Association to promote the sale and use of the technology, says that “recent congressional requirements are premature in my view.” Despite this concern from industry experts, politicians are keen to push onwards, and not only in America. Otto Schily, Germany's interior minister, recently declared his support for increased use of biometrics, asking: “How else would you propose to improve security?” Similarly, America's Justice Department responded to a recent GAO report by saying that the government is in a hurry to deploy biometrics—so why couldn't the GAO just get on board? It is difficult to avoid the conclusion that the chief motivation for deploying biometrics is not so much to provide security, but to provide the appearance of security.

I am whoever I say I am?

The claim that biometrics are not ready for widespread application may seem puzzling, given the advances in computer technology. To understand the reservations of the experts, it is necessary to take a closer look at how biometrics work.

Biometrics can be used in two ways. The first is identification (“who is this person?”), in which a subject's identity is determined by comparing a measured biometric against a database of stored records—a one-to-many comparison. The second is verification (“is this person who he claims to be?”), which involves a one-to-one comparison between a measured biometric and one known to come from a particular person. All biometrics can be used for verification, but different kinds of biometric vary in the extent to which they can be used for identification. They also vary in cost, complexity and intrusiveness. So which biometrics have been chosen for the new passports, visas and identity cards, and why?

The oldest biometric is the one we use most frequently—a person's face. But while recognising faces is something that people can do easily, computers find it very difficult. Most computerised face-recognition systems work by building a template based on 30 or so “markers”—the positions of the edges of the eyes, the cheekbones, the base of the nose, and so on. These markers are chosen so that they are unaffected by expression or the presence of facial hair. Matching faces is then a matter of matching the templates.

However, the results of an American government test released in March cast doubt on the accuracy of face-recognition systems. The test, called the Face Recognition Vendor Test, used systems from ten leading firms and a database of 121,589 images of 37,437 people. None of the systems worked well in a formal identification mode when shown a face and asked to identify the subject; nor did they work well when trying to recognise a face surreptitiously. However, three of the systems could be used for verifying identity in a controlled environment, such as the booths used to take passport photos.

“Biometrics still do not work well enough for many applications in which they are being deployed”

Joseph Atick of Identix, a biometrics vendor based in Minnetonka, Minnesota that took part in the test, insists that the deployment of his company's system by customers such as the state of Colorado, which is using it to try to prevent individuals from obtaining multiple driving licences, attests to the viability of facial biometrics. But Joel Lisker, a biometrics consultant who has worked extensively with America's Transportation Security Administration (TSA), says face-recognition systems have yet to prove themselves. In the TSA's own tests, not a single wanted person was spotted.

A hands-on approach

The first biometric technology to become widely used was hand geometry. It involves scanning the shape, size and other characteristics (such as finger length) of some or all of the hand. Users are required to make some claim about who they are—by swiping a card, for example—before a scan. The biometric template of the person they claim to be (in some cases, stored on the card itself) is then compared with the scan.

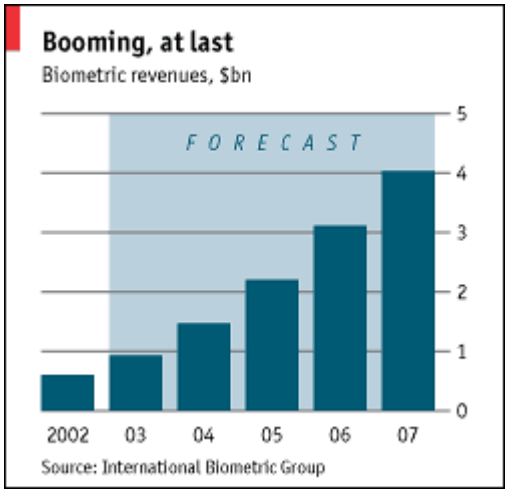
Because it relies on comparatively simple sensors, hand geometry does not require the fancy technology that underpins other biometric systems, which gave it a head start. Bill Spence of Recognition Systems, a

biometrics company based in Campbell, California, says San Francisco's international airport has used hand-geometry systems to control employee access since 1993. Another system, at Ben Gurion airport in Israel, uses hand geometry to allow trusted passengers to pass security control. A similar system deployed in America, called INSPASS, allows frequent travellers to the United States to skip immigration queues at several large airports.

Hand-geometry systems are already used to control access and verify identities at many airports, offices, factories, schools, hospitals, nuclear-power plants and high-security government buildings. They are also used in “time and attendance” systems, in which shift workers clock on and off using their handprints—preventing time-card fraud through “buddy punching”. One benefit of hand geometry is that unlike fingerprint scanning, it is not stigmatised by an association with law enforcement. However, hand geometry has a key problem: people's hands do not differ enough for it to be used as an identification system. As a result, says Dr Atick, hand geometry's market share is plunging.

The technology which is perhaps most responsible for the decline in hand geometry is finger scanning. Ink-based fingerprints have been in use for over a century, but in recent years they have gone digital. Modern electronic systems distil the arches, loops and whorls of conventional fingerprints into a numerical code. This can be compared with a database in seconds and with an extraordinary degree of accuracy. Identix, which sells such a system, was recently selected by America's Department of Homeland Security to provide fingerprint scanners at Citizenship and Immigration Services offices across the country.

The remarkable success of fingerprints as a forensic tool for law-enforcement agencies has come about because these agencies take fingerprints very meticulously. All ten fingers are used, and each finger must be rolled back and forth, to get “nail-to-nail coverage”. Such thoroughness is appropriate in a police station, however, but not in an airport. Another problem is that around 5% of people do not have readable fingerprints, either because their fingerprints are genetically indistinct or because years of manual labour have worn them down.



And while the technology is now relatively cheap—basic digital fingerprint readers cost less than $100—it is not foolproof. Some fingerprint scanners can be spoofed with nothing more than a breath of hot air, which reactivates latent prints left on the scanner. And Tsutomu Matsumoto, a researcher at Yokohama National University, was able to fool fingerprint scanners around 80% of the time using fingers made of moulded gelatin.

An eye for an eye

Another option is to scan the eye. Such systems date back to the 1970s, when the retina, the surface of the back of the eye, was considered the useful bit, mostly because medical techniques for probing it had been developed. The iris, the coloured part surrounding the pupil, had been less thoroughly investigated. However, almost all experts now agree that the iris makes a better biometric than the retina, because it can be more easily examined. The use of cameras to measure the fibres, furrows and freckles in the iris is familiar from numerous spy films, with good reason: iris scanning is generally deemed to be the most reliable biometric.

According to Peter Higgins, a biometrics consultant, the most widespread use of iris biometrics to date has been in Afghanistan, where the United Nations High Commissioner for Refugees (UNHCR) is using iris scans to attempt to prevent refugees from collecting benefits more than once. Though the system has logged over 7m transactions, Mr Higgins points out that, because it is impossible to collect meaningful statistics in such an uncontrolled environment, no one has any idea how well the system has performed. Smaller-scale tests of other state-of-the-art iris systems, described in a GAO report, indicate that the rate of false non-matches can be as a high as 6%. This would mean that one in 20 attempts to claim benefits twice would be successful. Given the paltry sums being given to each refugee, it is not clear that the cost of deploying this anti-fraud system was justified. However, the UNHCR points out that it may have had a useful deterrent effect.

Other biometrics include voice recognition, which is cheap, but not terribly reliable; gait recognition,

which attempts to recognise people from the way they walk; dynamic signature-recognition, based on analysis of the shape of a signature and the way the pen moves while it is being written; and thermal imaging, which seeks to identify people by the pattern of heat which their bodies emit. But none of these technologies is taken seriously enough for use in a passport.

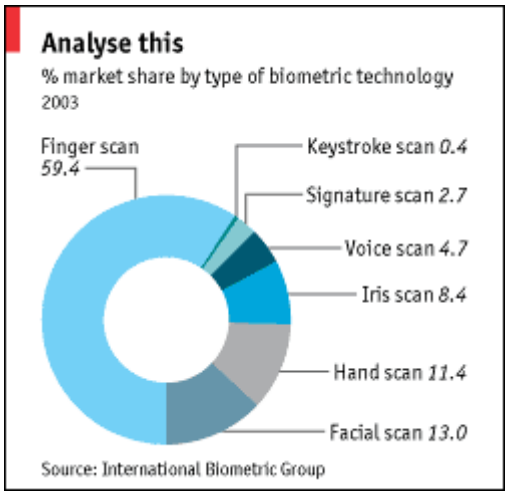
Given all the limitations of individual biometrics, the best way forward in the long run, according to a forthcoming paper by Anil Jain, a biometrics expert at Michigan State University, will be the use of "multibiometric" systems. These combine several different biometrics in a single security system with almost universal coverage. For even if someone's fingerprints cannot be read, it is likely that his irises can be, and vice versa. Furthermore, Dr Jain points out that combining several different systems can lead to substantial improvements in error rates.

And the winner is...

So it is only logical to expect biometric passports and visas to take a multibiometric approach. America has decided on a combination of finger scanning and face recognition, and Europe seems to be leaning towards the same combination. Oman and the United Arab Emirates will issue biometric identity cards based on finger-scanning technology, to which Britain plans to add iris scans. All of these plans accord with the recommendation of the International Civil Aviation Organisation, which recently proposed that finger scanning should be adopted as an international standard, chiefly because fingerprint readers are much cheaper than iris scanners. However, America is also adopting face recognition because, say officials, they do not have the fingerprints of many terrorists, but they do have pictures. While this sounds like a logical explanation, Mr Higgins notes that, given the high error rates of facial-recognition systems, in relying on such a system, "you would really be exposing yourself."

The other critical choice, driven by the limitations of biometric technology, is that these biometrics will be used for verification, not identification. That is because identification is simply not feasible with databases containing millions of users. There are two key measures of how good a biometric system is: the false match rate, and the false non-match rate. These two can be balanced against each other. Tune the system to be tolerant, so that everything matches, and you have a false non-match rate of zero, but a very high false match rate; conversely, in a system that is so strict that it allows no matches, the false match rate is zero, but the false non-match rate is 100%.

In an identification system, particularly one that has to search a large database of millions of templates, the task is much harder. Even a false match rate of one in 10,000 would produce thousands of false matches. And if you are trying to spot members of a small group of known terrorists, even the best of today's biometric systems produce hundreds of false matches for every correct match with a terrorist. The result is that the system is flooded with false alarms, which are routinely ignored, providing almost no additional security. As a result, the new border-control systems now being implemented at American border posts are merely verification systems.



Now for the catch

The trouble is, it is not clear that these identity-verification systems are worth the cost and trouble of introducing them. All 19 of the September 11th hijackers entered the United States using valid visas, on their own passports, for example. Verifying their identities using biometric visas would have made no difference.

Worse, spending the billions of dollars that the GAO estimates will be necessary to implement biometric systems at border-crossing points—$1.4 billion to $2.9 billion initially, and $700m to $1.5 billion annually thereafter—may mean there is less to spend on other areas of security. America has long land-borders with Canada and Mexico, and tens of thousands of miles of coastline. Using biometrics at airports does little to reduce the level of illegal immigration, since most such entries do not occur at airports, but over the far more porous land and sea borders. The new system will, however, be ideally suited for spotting tourists or students who overstay on their visas, but that is a trivial issue.

The cost of the new system will not just be financial. All visas will now have to be issued face to face, so

that scanning can take place. This will put a huge administrative load on America's consulates around the world, which currently issue two-fifths of visas by post.

Given the limitations of current biometric technology, the Big Brotherish concerns raised by privacy advocates are largely misplaced, at least for the time being. Other technologies, such as internet wiretapping and the ability to track the location of mobile phones, will arguably make much more substantial encroachments on privacy over the next few years.

However, in the long term, biometrics, by their very nature, will compromise privacy in a deep and thorough fashion. If and when face-recognition technology improves to the point where surreptitious cameras can routinely recognise individuals, privacy, as it has existed in the public sphere, will in effect be wiped out. No doubt there will be some benefits: fraud, in particular the persistent and increasingly annoying problem of identity theft, might be substantially reduced if biometric-identification systems, introduced in the form of passports, visas and identity cards, become widespread. But privacy advocates argue that such benefits are not worth the risk of “function creep”—that once biometric passes have been issued by governments, it will be tempting to use them for all sorts of things, from buspasses to logging on to your office PC.

Spurred by the misplaced enthusiasm of governments around the world, biometrics seem headed for dramatic growth in the next few years. But calm, public discussion of their benefits and drawbacks has been lamentably lacking. Such discussion is necessary both to prevent the waste of public money in the short term—for the most part, the private sector has been wiser in its adoption of biometrics—but also to regulate what will eventually have the potential to become a powerful mechanism for social control.

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WEATHER FORECASTING

Predicting the micro-weather

Dec 4th 2003
From The Economist print edition

Weather forecasting: High-resolution weather forecasting is becoming increasingly sophisticated

IF THE use of a single, simplistic symbol—a sun, a cloud or a snowflake—to represent the weather for several hours over an entire city annoys you, you are not alone. Surely it ought to be possible to generate more detailed, finer-grained forecasts, neighbourhood by neighbourhood, hour by hour, which could be delivered over the web or beamed to a mobile phone? It is, and in some parts of the world such “high-resolution” weather forecasts are already available.

These detailed forecasts appeal both to consumers and to businesses. Historically, both groups have relied on government weather services—such as America's National Weather Service (NWS) and Britain's Met Office—which provide forecasts with a granularity of tens or hundreds of kilometres. The NWS, for example, divides the United States into a grid where each square measures 12km (7.5 miles) on a side. But weather can vary considerably over short distances and short time-spans. Consider Hawaii, where you can find desert next to rain forest; or San Francisco, where the weather can change from one neighbourhood to the next. Private companies, particularly in America but in other parts of the world as well, have now stepped in to provide high-resolution forecasts for particular markets and industries. These firms are using grid-squares as small as 1km across.

Zooming in

The resulting forecasts have obvious appeal to individuals who can use more accurate local forecasts to plan their outdoor activities, from skiing to sunbathing. WeatherBug, a piece of software provided by AWS Convergence Technology, a forecasting firm based in Gaithersburg, Maryland, has signed up 27m registered users in the three years since its launch.

But while consumers find it handy to know when to set out for the beach, it is businesses that stand to benefit most from these more detailed forecasts. For a farmer about to spray his crops, for example, knowing how the wind speed and direction will vary from one field to another is invaluable. Companies operating in transportation, construction, shipping, aviation, utilities, sports, media, emergency services, and a host of other areas also need to make decisions based on weather predictions. The NWS estimates that weather forecasts save America's airlines around $500m a year: avoiding a cancellation saves $40,000, and avoiding a diversion costs $150,000, for example.

Energy companies, which must forecast how much capacity their customers will use, are particularly sensitive to changes in the weather. Should they switch on the higher-cost generators which will enable them to produce more power, but at a greater cost? If they underestimate demand, they will need to purchase additional electricity on the spot market at high prices. This fine balancing act is performed using “load models” which use historical consumption records and weather forecasts to calculate how much power is needed, and which generators should be used.

“At critical temperatures, even a relatively small difference in the weather can make a substantial difference in energy consumption,” says Joel Myers, president of AccuWeather, a forecasting firm based

in State College, Pennsylvania. “The extra cost to a utility company if it plans for the lower temperatures on a day when the higher temperatures occur can be millions of dollars.” In other words, the more detail, the better.

Bridgeline, a company that operates gas pipelines in Louisiana, uses AccuWeather's high-resolution forecasts to monitor “severe weather events” in the Gulf of Mexico that could affect gas supply. When wind speeds exceed 90kph, offshore rigs must be shut down and evacuated. Hugh Connett, the president of Bridgeline, says he finds the NWS forecasts of a hurricane's track too vague, whereas AccuWeather's forecasts provide hour-by-hour predictions on a much finer scale. Since forecasting is an inexact science, Mr Connett says his firm uses “scorecards” to ensure such predictions provide value for money—and they do.

High-resolution forecasters generally use the raw data from government agencies, which is usually available free or for a nominal fee, as the starting point for their own forecasts. Next, they stir in extra data from weather sensors, radar and satellite images or terrain maps, and run their numerical computer models. Unlike the government weather services, private firms are not constrained by the need to provide blanket coverage, but can concentrate on particular areas—such as cities, ski resorts or oil fields—in finer detail.

MyWeather, a forecasting firm based in Madison, Wisconsin, uses databases of local geographical features, such as terrain, elevation and proximity to water, to produce accurate local forecasts for farmers, for example. AWS differentiates itself by having the densest network of sensing equipment. The NWS provides readings from about 1,000 locations in America, whereas AWS has a network more than six times denser, says Bob Marshall, the company's boss. He says this gives AWS an edge over its competitors, which are constrained by the limitations of the NWS network, for the output of a numerical model is only as good as the data fed into it. Another forecasting firm, Meteorlogix, specialises in delivering 1km-resolution forecasts directly into its clients' geographical information systems, so they can call up the exact weather at each factory, depot or warehouse.

Clouds on the horizon

But Clifford Mass, an atmospheric scientist at the University of Washington, is concerned that high-resolution forecasts may give a spurious impression of accuracy. He says such weather forecasts should be probabilistic, not deterministic. “You don't make one prediction. You make many,” he says. He likens high-resolution forecasting to a high-powered rifle. Aimed correctly, it does a good job, but if aimed wrongly it can do a lot of damage.

Ideally, says Dr Mass, meteorologists should perform “ensemble” forecasts. This involves running the model several times, with slightly different, but realistic, initial conditions each time. It is then possible to see how much small changes in the initial conditions affect the final outcome—and then to devise a more accurate probabilistic forecast. To use Dr Mass's analogy, this is the buckshot approach to forecasting, where the chances of hitting the target are much higher.

Unlike the government weather services, private firms can concentrate on particular areas—such as cities, ski resorts or oil fields—in finer detail

Bob Gordon of Meteorlogix, however, argues that while this academic perspective is correct, his business customers want to base their decisions on precise predictions about whether a particular weather condition will occur or not. Customers, he says, are not quite sure what to do with probabilistic forecasts. “They need to know, do I pour the concrete or not? Do I stop the train or not?”

Another problem with the ensemble approach, particularly for high-resolution forecasting, is that it requires far more computing power, since every forecast must be repeated several times—and there may not be time to do that before the forecast has gone out of date. High-resolution forecasting already requires more processing power to provide a forecast for a given area within a given time: halving the grid spacing (from 12km to 6km, for example) increases the amount of computing power needed fourfold. Even so, Steve Noyes of the Met Office says there is another alternative, and that is to run a “poor man's ensemble”. Instead of running a model 20 or 30 times, this involves comparing a new forecast with existing forecasts from other sources, such as government weather services, in order to assess the plausibility of its projections.

Computing horsepower is not the only impediment to providing more accurate high-resolution forecasts. Lloyd Treinish, a researcher on IBM's high-resolution weather project, Deep Thunder, says another limiting factor is the quality and availability of the input data to prime the models. “In order to do the forecast we need to know what the current weather conditions are,” he says. “As we go to finer and finer resolution we need better and better data in order to do that.” As a result, he says, there is much work being done to improve the networks of sensors used to observe the atmosphere. IBM, for example, uses its own network of weather stations to evaluate the accuracy of its high-resolution forecasts.

At the same time, the mathematical models are also being upgraded to cope with finer forecasting grids. Although they are highly sophisticated, many of the models in use today were developed over a decade ago, and understanding of atmospheric and oceanic physics has since improved. In America, a next-generation high-resolution forecast model is being developed by a partnership of the NWS, the National Oceanographic and Atmospheric Administration, the National Centre for Atmospheric Research, the navy, the air force, and the Federal Aviation Administration.

This new model, the Weather Research and Forecast model (WRF), is undergoing testing and is due for roll-out late next year. WRF will improve on the most prevalent current model, called MM5, in several ways, says Kelvin Droegemeier, a meteorologist at the University of Oklahoma. It is designed for use at grid resolutions of between 1km and 10km, will incorporate the latest advances in the understanding of atmospheric physics, and will work smoothly with data from ground-based and satellite radar.

Meanwhile, a new generation of geostationary satellites, such as Europe's Meteosat Second Generation series, the first of which was launched last year, will soon start to provide more frequent and detailed data, specifically for use in high-resolution forecasting. Within three or four years, polar-orbiting satellites will also be deployed. Since these orbit closer to the earth than geostationary satellites, they will provide even more detail. And phased-array radar, originally developed by the military to detect missiles, is now being tested as a meteorological tool for detecting tornadoes and storms. It scans larger sections of the sky than the Doppler radars currently used by weather forecasters, and can detect structures in the atmosphere with sharper resolution.

All of these new sensors, combined with improvements to forecasting models, will improve the raw material on which high-resolution forecasters base their predictions, and make possible further improvements. Already, some forecasters are using grid-squares smaller than 1km across—though there is much scepticism about whether the resulting forecasts are meaningful. For at such small scales, all kinds of new effects come into play, such as the atmospheric turbulence caused by skyscrapers.

Death of the weatherman?

As weather forecasting becomes more dependent on whizzy technology, there would seem to be less scope for human input. Will all these advances spell the end of the weatherman? Not likely, says John Dutton, a meteorologist at Pennsylvania State University. As observations and forecasts become more detailed, and ensembles of forecasts rather than single deterministic predictions become more widely used, the amount of information and the difficulty of interpreting it will increase dramatically. At the same time, he says, companies will come to rely upon increasingly sophisticated financial and operational computer models to govern their decision-making processes. As well as providing explanation and reassurance, meteorologists will have an important role to play “as part of an interdisciplinary process of designing information systems for making critical business decisions,” he says. In weather forecasting, as in so many other fields, it's not just what you know that counts—but how you act upon it.

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MEDICAL IMAGING

MRI's inside story

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From The Economist print edition

Medical imaging: Magnetic-resonance imaging, which provides detailed pictures of people's insides, has proved to be an invaluable medical tool. But exactly who should take credit for its invention is deeply controversial. This case history explains how scientific rivalry and engineering cunning drove the development of a life-saving technology that is now used to perform over 1m scans a week

“YOU know, what these people do is really very clever. They put little spies into the molecules and send radio signals to them, and they have to radio back what they are seeing.” That is how the physicist Niels Bohr is said to have described the principles behind magnetic-resonance imaging (MRI). Since its emergence in the 1970s, MRI has become a vital tool for diagnosing brain tumours and other diseases of the central nervous system, and for spotting soft-tissue injuries in muscles and ligaments. Functional MRI, a newer and even cleverer technology, provides real-time information on brain activity, which is particularly useful in guiding neurosurgeons. Unlike X-rays, magnetic resonance is completely harmless and provides far more detailed images of soft tissues. About 22,000 MRI machines around the world were used in 60m examinations last year.

In October, Paul Lauterbur, the director of the Biomedical Imaging Centre at the University of Illinois in Urbana-Champaign, and Sir Peter Mansfield, a physicist at the University of Nottingham in Britain, received the Nobel prize in medicine for making discoveries that “led to the development of modern magnetic-resonance imaging”. Many in the field believe the award of a prize for the invention of MRI has been long overdue. But the decision has re-ignited a long-standing controversy surrounding one man—Raymond Damadian—who regards himself as the true inventor of MRI, and claims that this year's winners made technological improvements based on his discovery. Others, however, describe Dr Damadian as a doctor with a big ego who had a good idea, but contributed little to its ultimate technical realisation. So who is right?

MRI has a complex history, even without the hoopla over Dr Damadian. It was made possible by contributions from numerous visionary scientists—including a handful of Nobel prize winners—over a period of more than 50 years, incorporating bits and pieces from many different disciplines, such as chemistry, mathematics, engineering, computer science, medicine and, of course, physics.

Felix Bloch of Stanford and Edward Purcell of Harvard shared the Nobel prize in 1952 for developing a way to measure the phenomenon that underpins MRI: nuclear magnetic resonance (NMR). The nuclei of atoms behave like tiny, spinning bar magnets. When placed in a strong, static magnetic field, nuclei tend to align with it, much like compass needles. When zapped with pulse of radio waves, the nuclei absorb energy, become “excited” and change direction. The time it takes them to “relax”

and return to their original state can be measured. Because many different atomic nuclei resonate at a characteristic radio frequency in a given magnetic field, NMR spectroscopy is now widely used to determine the molecular make-up of chemical compounds.

In the late 1960s, Dr Damadian, at the time a physician at State University of New York's medical centre in Brooklyn, was among the first to contemplate using NMR to scan the human body for disease. Following an obscure theory devised by Gilbert Ling, a physiologist, Dr Damadian believed he would be able to distinguish cancerous from healthy tissues on the basis of the cells' water structure. Most scientists consider Dr Ling's ideas wacky at best. Undeterred, Dr Damadian experimented by analysing excised tumours of rats using machines at NMR Specialties, a now-defunct company based in New Kensington, Pennsylvania. He found that the hydrogen nuclei of water in cancerous and healthy tissues showed pronounced differences in relaxation times, an observation he published in the journal *Science* in 1971.

Around the same time, Dr Lauterbur, then president of NMR Specialties, spent some time observing another research team that had come to the company to repeat Dr Damadian's experiments. One momentous night, while eating at a local diner with a colleague, Dr Lauterbur had the idea that is now at the core of how MRI scanners operate: to superimpose small variations, or gradients, in the uniform magnetic field normally used in NMR spectroscopy. Changing the field strength affects the resonance frequency of nuclei in direct proportion, and can thus be used to collect spatial information. The intensity of the resonance signal at a particular frequency then indicates the quantity of a given kind of nucleus in a particular location. (Most MRI scanners are tuned to detect hydrogen nuclei, which are abundant in the body's tissues in the form of water.)

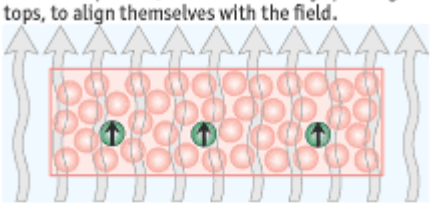
It was a groundbreaking insight, says Michael Moseley, president of the International Society for Magnetic Resonance in Medicine. At the time, many scientists thought creating a diagnostic imaging device based on NMR seemed far-fetched, if not ludicrous. Dr Moseley admits to being one of the sceptics initially. Most NMR machines, then chemists' tools, were made up of hollow magnets that could hold a sample the size of a pen. They also required a stringently uniform magnetic field that enabled chemists to measure the small differences in magnetic fields within molecules, essential to determining a specimen's molecular make-up. Such systems were, however, useless for detecting spatial information.

In 1973, Dr Lauterbur published his idea in *Nature*, along with the first MR images, of two tiny tubes filled with water. But his paper did not cite Dr Damadian's *Science* paper, even though Dr Lauterbur made a direct reference to it in a notebook entry made the day after his own discovery. When Dr Damadian found out that he had not been credited, he was livid. “One of the reasons for the bitter antagonism between the two people was that Lauterbur never referenced Damadian,” recalls Lawrence Minkoff, a former student and employee of Dr Damadian.

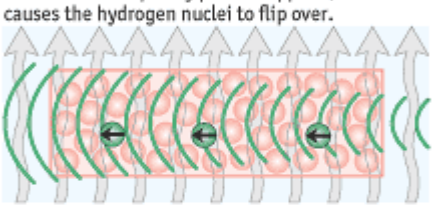
Not long after Dr Lauterbur's paper appeared in *Nature*, he began to promote the possibilities of MRI or “zeugmatography” as he called it, and fellow researchers took note. The mid-1970s saw a flurry of activity in the area. Against a backdrop of scepticism, teams at a handful of universities in America and Britain raced to publish images of ever increasing complexity. Soon the covers and pages of esteemed scientific journals featured images of such objects as a mouse, a finger, a lemon, a wrist and, finally, a human head. The eventual goal: to build a whole-body scanner.

How MRI works

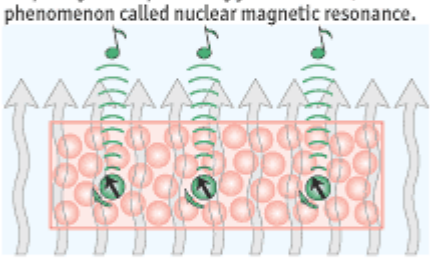
1. The patient to be scanned is placed in a strong static magnetic field. This causes atomic nuclei within the patient, which act like tiny spinning tops, to align themselves with the field.



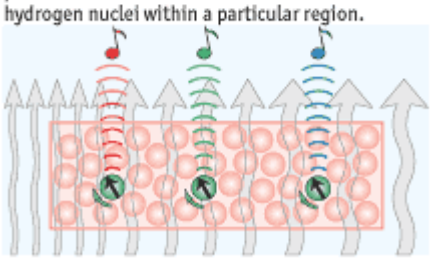
2. MRI scanners are tuned to detect hydrogen nuclei, which are abundant in the tissues of the human body in the form of water. A carefully chosen radiofrequency pulse is applied, which causes the hydrogen nuclei to flip over.



3. As they relax and right themselves again, the hydrogen nuclei emit radio signals at the same frequency as the pulse they just absorbed, a phenomenon called nuclear magnetic resonance.



4. The resonance frequency depends on the strength of the applied magnetic field. When precisely controlled variations, or gradients, are introduced into the magnetic field, the intensity of the resonance signal at a particular frequency indicates the quantity of hydrogen nuclei in a particular location. By applying gradients sequentially in two or three dimensions, it is possible to determine the distribution of hydrogen nuclei within a particular region.



This process is repeated to build up a scan in which different types of tissue can be distinguished, since the proportion of water, and therefore of hydrogen nuclei, varies from one kind of tissue to another.

Indomitable ambition

Dr Damadian was determined to win that race. In the early 1970s, he had devised his own method of scanning the human body point by point, originally intended to produce data rather than pictures. Nonetheless, Field Focusing Nuclear Magnetic Resonance (FONAR) was the method used when he captured headlines in 1977, publishing the first image of a chest cavity of a live man. Initially, he had volunteered his own body for the job—without success. His associates told him he was too fat, recalls Dr Damadian. Indeed, “Indomitable”, which is what he called his machine, preferred Dr Minkoff's skinny torso. On July 3rd 1977, after four hours and 45 minutes of collecting data from 106 points, a picture was created.

In characteristic fashion, Dr Damadian sent out a press release claiming he had created “a new technique for the non-surgical detection of cancer anywhere in the human body.” At that point, however, the machine had not been tested on cancer patients. When experts questioned Dr Damadian's assertion, he was forced to back down. In fact, that first full-body scanner, now on view at the National Inventors Hall of Fame in Akron, Ohio, on loan from the Smithsonian National Museum of American History, was an incredibly crude machine. A few years later, even Dr Damadian himself abandoned its underlying technology.

Meanwhile, Sir Peter Mansfield, who had also suggested gradients as a way to spatially localise NMR signals in a paper published in 1973, further contributed to the development of MRI by devising a scheme to acquire MR signals and construct images rapidly. When he presented his ideas at a symposium in 1977, he recalls facing a silent audience. Sir Peter wasn't entirely surprised, since his method could theoretically speed up the process of producing images from an hour to a fraction of a second. Because of the hardware requirements, it took more than a decade to implement his “echo-planar” imaging technique, but it is now commonly used to watch the brain at work in functional MRI.

Other researchers made their mark on the field, such as Richard Ernst, a Swiss scientist. Originally, Dr Lauterbur collected spatial information by rotating the gradient around an object. Dr Ernst suggested positioning gradients to form a rectangular grid, to simplify the process of creating two-dimensional images. In 1980, two British teams—one from Aberdeen University, the other a collaboration between EMI and Hammersmith Hospital—developed ways to optimise the contrast of images using differences in relaxation times. The Aberdeen group also came up with a practical implementation of Dr Ernst's technique, known as “spin warp” imaging, the method most commonly used for MRI today. In 1991, Dr Ernst was rewarded with a Nobel prize for chemistry.

Since the Nobel committee rewards scientific achievement, not good manners, it would have been fairer to include Dr Damadian in the prize

With the development of more sophisticated whole-body MRI prototypes in 1980, interest in the new technology mounted. Corporations began to grasp that MRI (the word “nuclear” had been dropped for marketing reasons by this time) might become a useful adjunct to computer tomography (CT) scans, which create detailed images by combining multiple X-ray images. Philips, Johnson & Johnson, General Electric and other corporate heavyweights decided to pour millions into the promising technology.

As many researchers moved into the commercial sector, Dr Damadian did not sit idle. In 1978, he founded FONAR, based in Melville, New York. The small company struggled against its mighty competitors. But Dr Damadian's patents, the first one granted for an “apparatus and method for detecting cancer in tissue” in 1974, proved extremely useful. In 1997, after a lengthy legal fight that ended up in the Supreme Court of the United States, General Electric was ordered to pay FONAR nearly $130m for patent infringement. Cases with other companies were settled for undisclosed sums.

Dr Damadian achieved success in court, and received America's National Medal of Technology together with Paul Lauterbur in 1988. (In September this year, he won an Innovation Award in bioscience from *The Economist*—see article.) But widespread peer acceptance, and now the Nobel prize, have eluded him. He has taken a typically defiant stance. To voice his recent disappointment, he took out several full-page advertisements in the *Washington Post*, the *New York Times*, and a Swedish newspaper, *Dagens Nyheter*, after the announcement was made. He called on the Nobel committee “to correct its error” and asks Dr Lauterbur and Dr Mansfield to share the prize with him. So far, his demands have fallen on deaf ears.

Credit where it's due

The question of who deserves credit for MRI comes down to how you value the crucial steps in invention. John Gore, who directs the Institute of Imaging Science at Vanderbilt University, believes Dr Damadian's abrasive behaviour and outrageous claims may have clouded people's judgment. Since the Nobel committee rewards scientific achievement, not good manners, it would have been fairer to include Dr Damadian in this year's prize. “There is a case to be made that he was a visionary and proposed the idea of scanning through the human body,” he says. But Ian Young, an electric engineer at Imperial College in London, and a former colleague of Dr Gore in the EMI/Hammersmith collaboration, disagrees. The “key invention” that everybody uses in MRI today, he says, “is the gradient field.”

While another Nobel prize may be awarded for MRI some day, few expect it will be to Dr Damadian. Functional MRI, based on a technique called “blood oxygen level dependent” scanning, a phrase coined by Seiji Ogawa of Bell Labs in 1990 and based on a discovery by Nobel Laureate Linus Pauling and his colleague Charles Coryell, is revolutionising studies of the brain. Like hydrogen nuclei in water, iron in deoxygenated blood acts like a tiny magnet. Because neural activity causes changes in blood oxygenation, researchers can now pinpoint active areas in the brain while people complete various mental activities.

AP

Watching the brain in action

In the early 1990s, a race ensued to create the first human images using this new technique. After being rejected by leading scientific journals because their papers supposedly contained nothing new, two pioneering teams, one from Massachusetts General Hospital in Boston, the other headed by Kamil Ugurbil from the University of Minnesota with Dr Ogawa, successfully submitted papers to the *Proceedings of the National Academy of Sciences*. Both were accepted within days of each other and published in consecutive issues in 1992.

The development of functional MRI mirrors some of the key points that propelled the early development of MRI in the 1970s—the involvement of visionary scientists, strong competition between research teams, and a willingness to challenge accepted notions in the field. The existence of two rival teams suggests that there could be another Nobel dilemma in the making. But with little sign of animosity between the teams, no one expects to see advertisements in the papers when the next prize is awarded.

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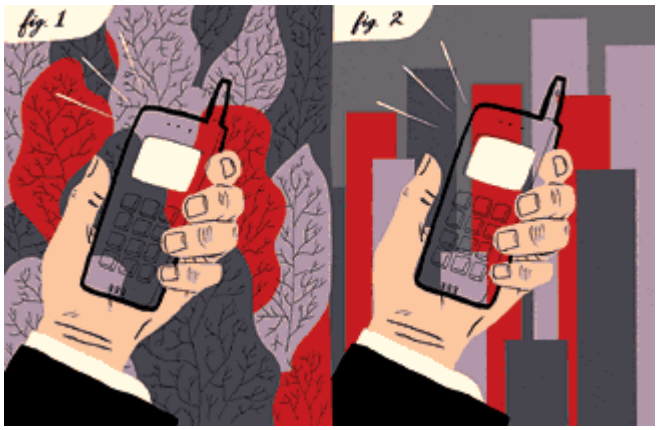
SMART RADIOS

How the radio changed its spots

Dec 4th 2003
From The Economist print edition



Smart radios: Radios capable of switching from one wireless standard to another, with nothing more than a dose of new software, are at last emerging from the laboratory

WHEN is a radio not a radio? When it's a computer program. Whether in a mobile phone, a fireman's walkie-talkie or a laptop's Wi-Fi card, a radio plucks a raw signal from the air and translates it into a useful stream of information (and vice versa). This translation involves several steps, most of which are normally done by dedicated signal-processing chips. But given enough processing power, the same job can also be done using software, rather than hardware. The result is a “software-defined radio” (SDR), also known as a “reconfigurable” or “smart” radio. As these names suggest, such a device can switch from being one kind of radio to another simply by loading some new software.

This chameleon-like ability is useful for a number of reasons. A mobile phone based on smart-radio technology might, for example, be able to switch between cellular standards used in different parts of the world. Mobile-phone base stations could be quickly and easily reconfigured to support new wireless standards. Smart radios could also ensure compatibility between the various radio standards used by different emergency services in a disaster-recovery situation, or link up soldiers in a multinational force whose radios might otherwise be incompatible.

Such flexibility comes at a cost, however. Dedicated signal-processing chips are designed to do one thing well, and use much less power than a general-purpose microprocessor. But as general-purpose chips continue to become smaller, cheaper and more powerful, the smart-radio approach will become increasingly practical, even in mobile devices where power consumption is constrained.

Smart radios will also make more sense as new wireless technologies proliferate, increasing the number of radio standards that a single device is expected to support, which in turn increases the number of dedicated radio chips required. A wireless-data card for a laptop might have to support various cellular standards, the Wi-Fi wireless local-area network standard, and Bluetooth, a short-range technology used to link computers with mobile phones. With exotic new standards such as 3.5G, 4G, WiMax and 802.20 on the horizon, smart radios could provide flexibility and compatibility. Now, after years in the laboratory, they are starting to emerge into the market.

Alphabet soup with chips

Next year, for example, Sandbridge Technologies of White Plains, New York, plans to launch a new smart-radio chip called Sandblaster. Once the appropriate software has been loaded, this chip can

support a range of wireless standards, including GSM and CDMA cellular standards, their respective “third-generation” (3G) standards, W-CDMA and CDMA2000, plus Wi-Fi, Bluetooth and global-positioning system (GPS) standards. Sandblaster can even support more than one of these standards at the same time, such as W-CDMA and Bluetooth, for example. A single smart chip can thus replace several dedicated ones.

The trick to doing all this while maintaining low power consumption, says Guenter Weinberger, the company's boss, is that Sandblaster is both optimised for signal processing and based on a very efficient “multi-threaded” design which allows it to run several interleaving programs, or threads, at once. Supporting one of the 3G protocols, he says, requires the chip to run multiple threads. Simpler standards such as GSM and Bluetooth require just one thread. The chip throttles back its power consumption when performing less arduous tasks. The goal, says Mr Weinberger, is for the chip's power consumption to be comparable to that of dedicated signal-processing chips.

These are bold claims, but they are being taken seriously. Sandbridge has heavyweight backers including Siemens and Infineon Technologies. It demonstrated a prototype chip, acting as a Wi-Fi radio, at the 3GSM wireless conference in Cannes earlier this year. Sandblaster chips could be used to make mobile phones capable of working on both the CDMA standard, popular in America, South Korea and Japan, and the GSM standard that is dominant elsewhere. Mr Weinberger says he can also imagine smartphones for corporate users that include Wi-Fi capabilities too.

But smart-radio chips, from Sandbridge and other firms, will initially be used to build 3G handsets. The 3G standard being adopted in Europe, W-CDMA, is completely different from existing GSM technology. So 3G handsets must be able to switch between two radio standards in order to ensure coverage outside 3G areas. This is currently done using multiple radio chips. But, notes Mr Weinberger, this “dual mode” design lends itself to the smart-radio approach.

Another motivation is that 3G standards are still evolving. “W-CDMA is changing every year, but it takes two years to implement on a chip,” says Mr Weinberger. A handset based on a smart radio, however, just needs a software upgrade, which can be devised quickly and then delivered to the handset over the air. This approach appeals to network operators, because it is far cheaper than recalling hundreds of thousands of handsets when an upgrade is needed.

Another school of thought, however, claims that the greatest opportunity for smart radios lies in cellular base stations, rather than in handsets. Al Margulies of the SDR Forum, an industry body that is dedicated to the development and deployment of software-based radio technology, says that size and power constraints mean that the technology will appear in radio infrastructure first, and handsets later. But the benefit is the same: flexibility. As wireless standards evolve, “you don't want to do fork-lift upgrades every two years,” he says.

“Smart radios could promote innovation by allowing new wireless standards to flourish, while concealing the underlying complexity from users”

PicoChip, based in Bath, England, is one of several companies building wireless base stations using smart-radio technology. It has built a 3G/W-CDMA base station based on its specially designed smart-radio chip, the PC102, and appropriate software. The high-speed upgrade to W-CDMA, called HSDPA, can be added as a software upgrade, and the company is working on new software to support additional protocols such as CDMA2000, 802.16 (a fixed-wireless protocol) and TD-SCDMA (yet another 3G technology expected to be adopted in China).

Building base stations on a flexible, software-based foundation means there is no need to send engineers out to install upgrades when new protocols emerge or existing ones are updated. “Operators are worried about interoperability, bug fixes, obsolescence, new features, so they want software upgrades in the base station so that their investment will live as long as possible,” says Rupert Baines of picoChip. In future, he suggests, operators might even choose to reconfigure base stations dynamically in response to usage patterns so that, for example, they offer more data capacity at some times of day, and more voice capacity at others.

“The wonderful thing about the software approach is that it frees you from the tyranny of the standards cycle,” says Vanu Bose of Vanu, a smart-radio spin-out from the Massachusetts Institute of Technology. His firm's software-based GSM base station runs on industry standard Hewlett-Packard servers. The software-based approach has particular appeal in America, he suggests, where multiple wireless standards co-exist and overlap. Several operators use three different standards—AMPS, TDMA and GSM—

within their networks. With a software base station, they could reallocate channels between these standards automatically depending on demand, says Dr Bose.

Software-defined base stations might also be more reliable, suggests Joseph Mitola, a pioneering smart-radio researcher at the Mitre Corporation, a non-profit research organisation, who is currently working with America's Defence Department. Conventional base stations, he points out, have hundreds of coaxial cables connecting the bits of various signal-processing circuitry. Replacing all this circuitry with a powerful computer, and doing the processing in software instead, means there are fewer things to go wrong as the circuitry heats up and cools down, and fewer cables for rats to chew.

Smart radio on the march

As with many technologies, however, smart radio will make its first widespread appearance in the military arena, says Mr Margulies. Military users are less sensitive to price, weight and power constraints. In America, the first radios based on smart-radio technology are about to be delivered as part of the Joint Tactical Radio System (JTRS). A software-based approach, says Mr Margulies, will enable new radios to communicate with existing radios, but will also allow future upgrades, both to improve security and ensure interoperability between emergency services and the various branches of the armed forces. “These new radios will allow the army, navy and air force to talk,” he says. In addition, JTRS is expected to reduce maintenance costs by replacing multiple incompatible radios, all of which require different spare parts, with a single radio. Work is under way to make JTRS compatible with the military radios used by Britain and other countries, for use in multinational operations.

Interoperability is also a cause of concern in the field of public safety. “In the United States it is not uncommon for city police to be unable to communicate with the fire department, the county police, or federal organisations,” says Mr Margulies. At the moment, the usual approach is to standardise on a single radio channel. But this limits capacity and interferes with the chain of command. In the wake of the terrorist attacks of 2001, radio interoperability has been identified as a key priority by the Department of Homeland Security. But issuing new radios would be prohibitively expensive. A smart radio, however, can switch from one network to another.

Vanu has developed just such a radio, based on an iPaq handheld computer. Clicking on different icons on its screen reconfigures the radio's software, so that it can switch between different emergency bands. Cleverer still, however, is the radio-bridging technology the company is developing under a military contract. A cluster of smart radios is configured to transmit and receive on different emergency bands, and an icon-based control system allows a controller to decide who can communicate with whom. If the police need to talk to the National Guard, for example, says Dr Bose, “the system listens to traffic on both networks, and patches them together.”

Taking this several steps further, the ultimate smart radio, says Dr Mitola, would be aware of its surroundings, be able to adapt itself in response and learn from experience—a concept he has dubbed “cognitive radio”. Such a radio might take into account its location, the local spectrum policy, the weather and the amount of battery power left, and then agree a suitable protocol with the local network infrastructure. “The handset talks to the infrastructure and says ‘I want to do a video call, and I have this much battery left',” says Dr Bose. “And the infrastructure says ‘This is the spectrum available, use this standard, here is the software'. The standard is dynamic.”

This is a far cry from the current state of affairs, where standards take years to hammer out. Ultimately, smart radios could do away with the standards wars that bedevil the wireless industry and so irritate users. The technology would promote innovation by allowing all kinds of new standards to flourish, while concealing the underlying complexity from users who are currently mired in an alphabet soup of incompatible standards. Now that really would be smart.

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CONSUMER ELECTRONICS

Hard disks go home

Dec 4th 2003
From The Economist print edition

Consumer electronics: Hard disks are starting to appear in household devices, from televisions to stereos, adding novel features and making possible new products

GOING on a long trip? Desperately afraid of boredom, or silence? Help is at hand. You can now cram 2,000 hours of music—enough for around 120 versions of Wagner's "Ring" cycle—into a device the size of a deck of cards, or squeeze ten hours of video (enough for three or four movies) inside a video player the size of a paperback book. Or perhaps you are stuck at home and want to watch a football game, while simultaneously recording a film and your favourite sitcom on different channels (just to arm yourself against any possibility of boredom in the future). You can do that, too. This is all made possible by a technology normally thought of as part of a personal computer, but now finding its way into a growing range of consumer-electronics devices: the hard-disk drive.

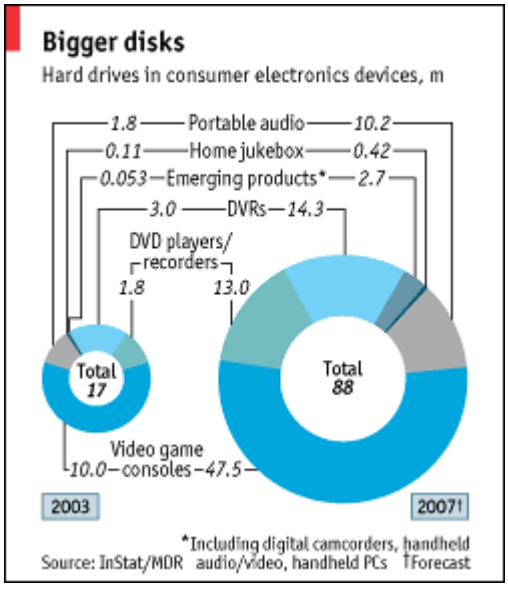
Hard disks have several advantages over other storage media. Unlike the tapes used in video-recorders and camcorders, they do not need to be wound or rewound; disks are "random-access" devices which allow instant jumps from one place to another. Better still, they can also store and fetch more than one stream of data at once, for example to record one TV programme while playing back another.

In some kinds of devices, hard disks also have the edge over solid-state storage media, such as the memory cards used in digital cameras and music players. While hard disks are larger and require more power, they offer far higher capacity—measured in billions of bytes (gigabytes) rather than millions (megabytes)—and at a far lower cost per byte. By and large, hard disks are not used in digital cameras, where small size and long battery life is important, and memory cards are sufficient to store hundreds of images. To some degree the same is true in portable music players as well, but here hard disks can offer more benefit, holding thousands rather than dozens of individual tracks. That is why Apple chose a tiny hard disk for its popular iPod player.

The number of consumer-electronics devices containing hard disks is growing fast, according to figures from InStat/MDR, a market-research company. Around 9m such devices were sold in 2002, and the figure is expected to grow to around 17m this year, and reach nearly 90m by 2007 (see chart). As well as offering clever new features for consumers, this trend presents a valuable opportunity for hard-disk makers, which have seen their sales

stagnate as the number of PCs sold worldwide has flattened at around 150m units. No wonder they are now eyeing the consumer-electronics market: around 170m TVs, for example, are sold each year.

Hard drives are increasingly suitable for use in consumer-electronics devices as they become quieter, cheaper and more robust. Most important of all, they are also getting smaller: some of the biggest potential markets depend on tiny new hard drives that appeared on the market only this year. In short, the use of hard drives in consumer electronics is still at a very early stage. The potential, for both manufacturers and consumers, is vast.



How to save a sitcom

Perhaps the most dramatic example of the use of hard disks in consumer devices is the emerging market for digital video recorders (DVRs). Such devices, pioneered by companies such as TiVo Systems and ReplayTV, have spread most widely thanks to satellite television services such as Dish Network in America and Sky in Britain, both of which incorporate DVR technology into their set-top decoder boxes. DVRs use a hard disk to store video, much like a conventional video recorder, by recording shows at set times. But they may also allow viewers such novelties as pausing and rewinding live television broadcasts (handy for the snack-crazed or those with overactive telephones); recording more than one programme at a time; or recording one programme while playing back another. DVRs can even learn their users' preferences and record programmes accordingly, thus creating the equivalent of a personal TV channel. These are all feats that conventional video recorders cannot match.

There is still room for improvement, however. The typical set-top box with a hard drive has a mere 30 gigabytes of storage, equivalent to about ten hours of high-quality video, or 30 hours at lower quality. This capacity is even more limiting when you realise that unlike conventional video recorders, with tapes that can be popped out and stored, DVRs are impractical for long-term storage. Keep your favourite film on the hard drive, and there may not be enough room to record all your favourite programmes while you are away on holiday.

Originally, DVRs were built around fairly conventional hard-disk technology. But manufacturers now cater to the DVR market, for example with the recent creation of a standard “time limiting command”, which determines how hard drives handle error checking. Hard drives in PCs are constantly checking and rechecking to make sure they don't lose any data, because a single bit out of place can corrupt an entire document or piece of software. Such fastidious error-checking is not so vital when recording streams of video, where fast and smooth playback is important, and a few lost bits won't affect the image quality. The big hard-drive makers each once had their own approach to time limiting, but they have now agreed on a single standard, which will make it easier for consumer-electronics firms to design new products.

DVRs are still a nascent technology, with perhaps 2m sold worldwide, so many consumers, even in the rich world, have yet to see one in action. But those who have had this pleasure almost never want to go back to watching conventional television. Michael Powell, America's communications regulator, famously described TiVo as “God's machine”. One problem is that consumers often do not understand what they will gain from a DVR until they have used one, so educating the market will take time. DVRs have, however, featured in the plots of sitcoms such as “Sex and the City”, which is a sure sign of their cultural potency.

One thing that might help to spread the word about DVRs is the emergence of handheld video players that use hard drives for storing programmes, such as the Archos AV, which can store up to 80 hours of video using the new MPEG4 compression algorithm, and the RCA Lyra. These devices could provide “TiVo to go”, by recording programmes so they can be watched while on the road, and demonstrating how hard disks can transform the experience of watching TV.

A whole new game

While TV presents a huge potential market for hard drives, you are currently more likely to find one inside a different box under the television: a games console. Microsoft's Xbox has a hard drive built in as

standard, and a hard-disk attachment can be added to Sony's PlayStation 2. Its next-generation console, the PlayStation 3, will undoubtedly contain a hard drive when it is launched in 2005 or 2006. Since tens of millions of consoles are sold every year, the emergence of the hard disk as a standard component represents another opportunity for hard-disk makers.

But since games are supplied on DVD-like disks, why do consoles need a hard drive? With an Xbox connected to the internet via a broadband connection, “you can download new levels and new characters for your games,” enthuses Rob Pait of Seagate Technology, a hard-drive maker. Not everyone is convinced. “If he's doing that, he's an exception,” says Danielle Levitas of IDC, a market-research firm. Even publishers working closely with Microsoft on the Xbox have not, she says, figured out how to take advantage of the built-in hard disk: few of the 15m or so Xbox users are actually downloading things to their hard disks. Ms Levitas agrees that consumer-electronics devices will provide a huge new market for hard-disk makers, but notes that it is taking longer than expected.

A third product category where hard disks are making an impact is in portable music players. Hard disks are ideal for storing music, for while a 60-gigabyte drive can hold around 20 hours of high-quality video, it can hold more music than most people own. The best known example of a disk-based music player is Apple's iPod. But the hard drive faces far more competition in the portable music-player market than it does in set-top boxes or games consoles. Solid-state memory is far more durable than even the most shock-proof hard drive, and consumes less power. And while the cost per byte is much lower for hard disks, the smallest hard disk costs much more than a small (say, 64-megabyte) memory card. That means hard disks cannot compete at the price-sensitive lower end of the music-player market.

Unlike the tapes used in video-recorders, hard disks are “random-access” devices which allow instant jumps from one place to another

As a result, memory-based players outsold disk-based ones by 2.8m to 1m in 2002, according to IDC. The company predicts that by 2007, memory-based players will still be ahead, selling 8.2m units, compared with 4.8m disk-based players. And devices that play CDs or MiniDiscs will remain the dominant form of music player for some time, with a combined total of 24m units expected to be sold in 2007, according to IDC's forecasts.

Small is beautiful

The iPod is built around a particularly small hard disk, the spinning innards of which measure just 1.8 inches in diameter. Most consumer-electronics devices use 2.5-inch or 3.5-inch hard drives, just like laptop and desktop PCs. All of these sizes present an obvious limit: they are too big to fit in a mobile phone, or a small digital camera. But a new technology could carry hard drives into new markets, and help them win a bigger share of existing markets, such as that for music players. That technology is a new generation of 1-inch hard drives, such as Hitachi's Microdrive and a rival product from Cornice, a start-up based in Longmont, Colorado.

Cornice designed its hard drive from scratch, rather than simply scaling down an existing design. The first version of the Cornice drive only holds 1.5 gigabytes of data (compared with the 4-gigabyte capacity of Hitachi's forthcoming 1-inch drive, which is now being tested by several consumer-electronics firms). But it has already been incorporated into a dozen new products. Some are just smaller versions of existing products, such as RCA's Micro Lyra music player, which is about the size of a small bar of hotel soap. But some are in categories where hard drives have not previously been used. Perhaps the most notable example is the first disk-based camcorder, the Samsung ITCAM 7.

Kevin Magenis, the boss of Cornice, says hundreds of companies are designing products around his company's 1-inch drive, from slot machines to a portable karaoke player. Within five years, he claims, Cornice drives will be able to hold 15 gigabytes, expanding the potential market. As well as boosting the capacity of its existing drives, the company also plans to make even smaller ones that can fit inside mobile phones. “That's the killer app for us, but it's a couple of years off,” he says.

A hard disk in every pocket? With over 450m mobile phones sold every year, that would open up an enormous new market. No wonder hard-disk makers hope their products will break out of the computer industry. The much bigger world of consumer electronics beckons.

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LAST WORD

The father of fractals

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Benoit Mandelbrot's unusual multidisciplinary approach led him to an extraordinary discovery. He worries that modern science is now becoming too specialised

A mathematical maverick

ONLY rarely does the dry theorising of mathematicians strike a chord with the public. Most people have heard of Einstein and his famous equation, $E=mc^2$, or of Isaac Newton and his apochryphal falling apple, without necessarily understanding the detail of their elaborate theories. But even when mathematics has direct relevance to everyday life—in encrypting your credit-card details as they are sent over the internet, for example—the theorists who dream up the underlying numerical recipes do not become household names. So Benoit Mandelbrot is a rare kind of mathematician. For even if you have not heard of him, you are very likely to recognise the swirling computer-generated images of the Mandelbrot set, the colourful, coral-like mathematical structure that bears his name. Sometimes called the most beautiful object in mathematics, it has appeared in pop videos and coffee-table books, and on T-shirts, posters and computer screen-savers. Like Einstein's equation and Newton's apple, it has crossed over into the public consciousness.

The Mandelbrot set is a fractal, a term coined by Dr Mandelbrot that has a complicated mathematical definition, but in essence refers to rough shapes that look the same whether viewed from far away or close up. This phenomenon is common in nature: a head of cauliflower, for example, is fractal in shape, as are coastlines, mountain ranges, tree branches, river-bed patterns and clouds. In each case, a small fragment, when enlarged, resembles the larger whole. With the invention of the theory of fractal geometry, Dr Mandelbrot thus extended geometry so that it could be applied to complex rough objects as well as simple smooth ones.

This solved a number of troublesome problems in mathematics, such as the existence of objects that could not be classified as one-, two- or three-dimensional, but seemed to fall somewhere in between. A classic example involves determining the length of a coastline. As you zoom in on the coastline, more detail is revealed, so that it appears to get longer. Indeed, it is mathematically possible to have an infinitely long coastline contained within a finite space. But using Dr Mandelbrot's new theories, such curves could be assigned “fractional” dimensions. (The coastline of Britain, for example, turns out to be roughly 1.24-dimensional.) Fractal geometry can also be used to model and describe, though not to explain or predict, the clustering of galaxies, fluctuations of stockmarkets and turbulence of fluids.

What is striking is that fractals, or at least hints of them, have been under our noses all along. “Fractals as a tool of science are useful, but the idea of fractality has been there for ever and ever,” says Dr Mandelbrot. Many painters had an eye for fractals, he notes, including Leonardo da Vinci, Eugène Delacroix and, in particular, Katsushika Hokusai, some of whose paintings of landscapes and crashing waves contain regular, fractal-like structures. There are also fractal motifs in some Celtic jewellery. “Here was an aspect of shape in the world that had been seen by others, but never expressed in words,” he says. “I overturned a horn of plenty in which all kinds of things humanity has always known were located.”

So how was he able to put all of these pieces together? Dr Mandelbrot attributes his success to his unusual approach as a mathematician, which was, in turn, due to his unconventional education. Born in Warsaw in 1924, he was tutored by his uncle, with whom he spent much of his time playing chess and looking at maps. In 1936, the family moved to Paris, where he came under the influence of another uncle, his father's brother Szolem, who was a professor of mathematics and a keen painter. The family moved several times during the second world war, further disrupting the young Mandelbrot's education,

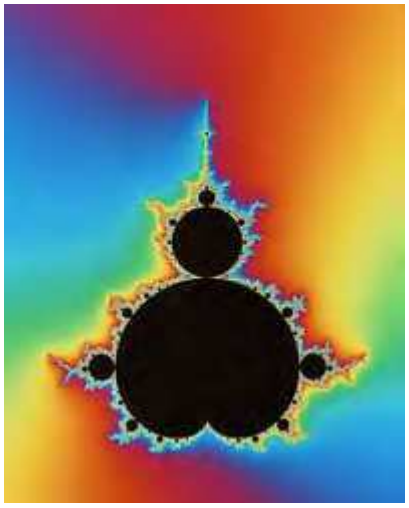
but with the result that he preserved a native gift for shape that might, he suggests, otherwise have been drummed out of him by a conventional education. He found that he could solve difficult equations more easily by relating them to geometrical forms, and filling in the algebra afterwards.

After a variety of academic positions, including a stint at the Institute for Advanced Study in Princeton under John von Neumann, a computing pioneer, Dr Mandelbrot went to work in 1958 for the research arm of IBM. He was first taken on to work in the field of machine translation, the use of computers to translate documents from one human language into another, but had soon moved on to other areas, from the statistical properties of noise on telephone lines to the management of water resources.

The organisation of IBM Research proved to be an ideal environment in which Dr Mandelbrot could pursue his unique geometrical approach, because unlike university departments, it was not rigidly divided into departmental “guilds” such as physics, mathematics, and so on. He was free to move from subject to subject, developing what would emerge as his theory of fractal geometry.

IBM also provided the vital tools Dr Mandelbrot needed to get people to pay attention to his work: powerful computers capable of generating graphical images. He started off using graphical plotters, of the kind used to produce architectural line drawings, to draw artificially generated river patterns that could not be distinguished from real ones. Then, in the late 1970s, Dr Mandelbrot began to explore a set of equations that had previously been investigated by Gaston Julia, a French mathematician, in the 1920s. Generalising from Julia's work, and plotting the result using specially written graphics software, Dr Mandelbrot produced the first images of the Mandelbrot set in 1980. “When the first pictures came out it was an extraordinary event,” he recalls.

Science Library



Under our noses all along

Suddenly, people started to pay attention, as Dr Mandelbrot's obscure formulas and eccentric geometrical theories were revealed as the source of images of astonishing beauty and complexity. “I could never get a hearing by formulas alone, because they were too different from what everyone else was doing,” he says. But as a result of his images, Dr Mandelbrot's theories, and the interconnections they established between otherwise disparate fields, were taken seriously too. Since the publication of his book “The Fractal Geometry of Nature” in 1982, Dr Mandelbrot has been awarded honours and prizes in a wide range of fields. In 1993, when he won the Wolf Prize for Physics, he was cited for “having changed our view of nature”. Most recently, this year he was awarded the Japan Prize by the Science and Technology Foundation of Japan.

Dr Mandelbrot's work also demonstrated the usefulness of computer-based visualisation and experimentation in mathematics. Many mathematicians, he says, liked the idea that certain structures defined by formulas were simply unimaginable; during the 20th century, he notes, many of them took refuge in wilfully obscure branches of mathematics, on the basis that such work had no military application. Ironically, the work of these pacifist mathematicians in areas such as number theory provided the foundations for modern cryptography, a key military tool.

Fractals such as the Mandelbrot set are commonly associated with the study of complexity, also known by the trendier moniker of chaos theory. But the study of chaos is now somewhat discredited, having failed to make any useful progress. Dr Mandelbrot has always distanced himself from such voguishness, preferring to avoid any topic “in which the data are not abundant and proof cannot be provided.” He is also unimpressed by “self-organising complexity”, another trendy topic; the idea has, he says, been around for centuries. Instead, he defines his work as having provided “a reasonable beginning of a science of roughness”.

Why mavericks matter

Dr Mandelbrot is worried by the increasing specialisation of science or, as he terms it, its concentration into subject-specific “guilds”. Science, he says, has become like a professional sport, where an athlete's worth is assessed solely within a narrowly defined event. While the tendency to form guilds is natural, he says, a few mavericks are essential, or the guild-based nature of science could lead to a loss of public interest and trust. Science requires the approval of society, which depends in turn on the availability of credible and articulate interlocutors. Yet guilds spend too little time forming connections with other

guilds, let alone with the public at large. He believes that interdisciplinary mavericks can both break down the barriers between guilds and reconnect them with the wider world.

Now approaching 80 years old, Dr Mandelbrot continues to publish papers in mathematics and economics, and is writing his memoirs. But he has one particular project that he would like to complete, to form a capstone for his unusual career: a book and accompanying art exhibition to demonstrate the historical precursors of fractals, and their abundance in art and nature, to a mass audience. Since his work is capable of drawing together so many threads of human experience and history, he explains, “I would like to put it in a fashion that people can appreciate without any attention to technical detail.”

“Science is like a professional sport—an athlete is assessed solely within a narrowly defined event”

The long saga of fractals, says Dr Mandelbrot, can be perceived as a ring from art through mathematics, finance, many corners of science and engineering, and finally back to art. Within this smooth ring, Dr Mandelbrot has pursued his unusual and rough-edged career path. With its many unpredictable twists and turns, but governed by an unseen logic, it is tempting—not to mention fitting—to liken the course of his life to a fractal.

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The drugs industry

Big trouble for Big Pharma

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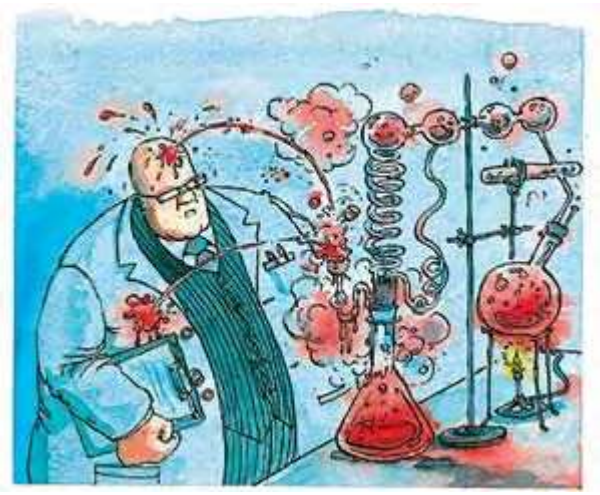

Why Big Pharma urgently needs a new business model

Get article background

WHEN GlaxoWellcome and SmithKlineBeecham announced their merger in 2000 to form GlaxoSmithKline (GSK), the world's second-largest drug firm, its new boss, Jean-Pierre Garnier, said that the merged firms would be “the kings of science.” This week GSK unveiled its crown jewels: a full pipeline of compounds in research and development, the result of a £2.6 billion ($4.5 billion), 16,000-researcher-strong effort. 82 new drugs and 20 vaccines are in development, 44 of them moving into later-stage trials.

Yet if Mr Garnier hoped that these numbers would impress his shareholders, he had to think again: GSK's share price actually fell on the news. Like investors in many other big drug firms, GSK's shareholders have little confidence that many of its new compounds will earn them a cent anytime soon. Of the 20 drugs that GSK plans to put into final-phase human testing in the next three years, the chances are, on current industry averages, that less than half of them will make it to market.

Next, consider Merck. On November 20th, news that the firm was stopping development of a diabetes drug after finding tumours in lab mice was met with dismay—and a wave of selling that knocked 11% off the firm's already-battered share price. With another vaunted project—an experimental anti-depressant—also failing last month, Merck's near-term pipeline now looks horribly empty. Even an upbeat profit forecast for next year, on December 3rd, did not cheer investors much.

Merck and GSK are not alone. In 1998-2002, according to Lehman Brothers, Big Pharma firms launched on average 59 drugs per year. In 2002-06, reckons Lehman, they will launch just 50 per year. Moreover, as many patents for the industry's existing products expire in the next five years, competition from generic-drug makers will threaten $30 billion (one-fifth) of annual sales in America alone, says AT Kearney, a consultancy.

When the drugs don't work

Big Pharma now faces two big challenges. First, control costs better. Stuart Walker, head of the Centre for Medicines Research International, reckons that total industry spending on R&D will reach $50 billion

this year, over 25% up on 1998. Sales and marketing overheads have soared, too. In the past four years, says Dean Hart, head of North American sales at Takeda, a Japanese drug firm, the number of sales representatives employed by drug firms in America has risen by 54%, to 90,000. Each rep costs on average $200,000 a year.

Sales, general and administrative expenses account for 17% of a typical big American firm's revenues, says Christopher White of AT Kearney. In the drug industry, such overheads (even excluding the big American sales forces) account for 33% of revenues. Standard management practices such as consolidating procurement, outsourcing personnel and finance functions and automating transaction processing all compare poorly with other industries, says Mr White. Many firms still make pills in-house, a job perhaps better done by a contract manufacturer.

But the tougher challenge is to improve the productivity of R&D. As Mr Walker points out, it is not just the number of new products that has fallen in recent years, but also their originality. Less than 30% of drugs launched last year were first or second in their class. The proportion was far higher in the late 1990s. Roughly 40% of R&D spending by Big Pharma is now on “line extensions”—improving existing drugs, not creating entirely new ones.

Many big drug firms have begun to license more of their technology and products from outside companies, especially biotechnology start-ups: having slumped in recent years, the value of biotech firms is now rising again. Novartis has set up a big R&D centre in Cambridge, Massachusetts, in part to better position itself to collaborate with outside academics. Eli Lilly's InnoCentive subsidiary runs a website where problems confronting drugmakers, such as how to generate a particular compound in chemical synthesis, are posted to be tackled by more than 25,000 registered problem-solvers as far afield as Russia and China. For a reward of $10,000-100,000, the firm gets a solution that would have cost more time and money to solve itself.

Others hope to improve the way they manage in-house R&D. Wyeth is encouraging its researchers to perform their tasks better by changing how it pays them. Unusually for the industry, its scientists get to share a bonus pool which depends, in part, on how many new drugs they launch each year. There used to be a temptation for Wyeth's early-stage researchers to throw their work “over the wall” before it was ready to the scientists who run clinical trials, says Robert Ruffolo, the firm's head of research. Because early-stage researchers now share incentives with later-stage scientists, the later-stage researchers have begun to “pull” the development of the most promising compounds forward. A corresponding “push” from early-stage workers hastens the process. GSK fundamentally reorganised its R&D in 2001, splitting its more creative arm into smaller “centres of excellence”, and enlarging the arm that enjoys economies of scale. Mr Garnier claims that his “best of both worlds” strategy is now paying off.

The industry's bloated overheads appear to be driving its decisions on the sort of drugs it seeks to develop. Like a supermodel who will not get out of bed for less than $10,000 a day, Big Pharma has decided that it is simply not worth investing in anything but a blockbuster. This means that lesser, albeit interesting, compounds fall by the wayside. An oft-quoted figure from the Tufts Centre for the Study of Drug Development puts the average cost of bringing a new drug to market at $897m. But as F.M. Scherer, an economist, points out, this is an average cost for big firms producing drugs for chronic diseases. Other firms can bring drugs for other complaints—infectious diseases or rare conditions, say—to the market for around $100m-200m.

Big Pharma also needs to do something about its poorly trained, generalised sales force, which is simply not equipped to chase smaller, more specialised markets. Most sales calls end, at best, with just a few seconds of a doctor's time, laments Mr Hart of Takeda. Some reps do not even make it past the reception desk before dropping off their free samples. Drug firms lag behind other industries in the way they use information technology to discriminate between profitable and unprofitable customers. Only one in five drug companies invests in any salesforce training beyond initial courses offered to recruits. Who, after all, needed to bother with trifles such as training and IT when, without much effort, a drug such as Lipitor, Pfizer's cholesterol-lowering medicine, was making sales of $8.6 billion last year alone?

Can Big Pharma achieve transformation without changes at the top? The bosses of big drugs firms have been horribly slow to grasp the enormity of their problems. Until recently, Merck's boss, Raymond Gilmartin, has been reluctant to license much technology from outside, instead putting his faith in the firm's own scientists. With Merck's in-house R&D now struggling, it will be no surprise if Mr Gilmartin's head is the first to roll.

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Disney's boardroom battle

Wishing upon a star

Dec 4th 2003
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Why Michael Eisner's enemies may be guilty of wishful thinking

Get article background

AFP

ROY DISNEY, nephew of Walt Disney, and an ally, Stanley Gold, have been trying to get rid of Disney's boss, Michael Eisner, for years. Their latest plot was to persuade him to step down gracefully next year, which will be his 20th anniversary at the head of Disney. But that failed, and instead both men have left the board: Mr Disney (pictured above, with chums) resigned at the weekend, rather than wait to be forced off because of his age, and Mr Gold left voluntarily on Monday, December 1st.

Both men used the occasion to write long, bitter letters calling for Mr Eisner's head. Now that they are free to talk to investors and the media, they plan to wage a public war against him, for years if need be. But Mr Eisner has no enemies left on his board. The firm's profits are rising. Last month it said that net profits for the fourth quarter of fiscal 2003 had more than doubled from last year. Indeed, the resignation of Messrs Disney and Gold could be seen as an admission of defeat. However pertinent their criticisms, they may have strengthened Mr Eisner's position.

Mr Disney gave seven reasons why Mr Eisner should leave, of which four will particularly resonate with investors. Under Mr Eisner, he wrote, Disney has failed to stop ABC, its broadcast-TV business, losing money, and it has suffered a drain of creative talent. Mr Eisner has not built a constructive relationship with Pixar, an animation firm responsible for over half of Disney's studio profits in recent years, or with cable firms. Mr Eisner has refused to establish a clear succession plan. Mr Gold added a detailed attack on Disney's strategy and its board which, he wrote, serves as “a bulwark to shield management from criticism and accountability.”

For Mr Disney to lash out at Mr Eisner is one thing, says one big investor in the firm. But Mr Gold, whom he describes as a tough money man who has credibility with institutions, is taken far more seriously. The corporate-governance arm of the same investment firm has asked Disney's independent directors to respond publicly to the issues that Mr Gold raised.

Investors will watch closely to see what happens to Disney's relationship with Pixar. In a board meeting, Mr Eisner bizarrely referred to Steve Jobs, Pixar's boss, as a “Shiite”, because of how he negotiates—to the embarrassment of other board members. Under the contract between the firms, Disney and Pixar share the costs of the animation films that Pixar makes and Disney markets and distributes, and Disney gets half of the profits plus a distribution fee. Mr Jobs is now free to negotiate a better deal, and an announcement could come soon; if he went to another studio, shareholders would really worry. At the least, Mr Jobs will make sure that Disney earns far less from his films in future.

For now, Disney's share price is benefiting from hopes of a cyclical increase in visitors to its theme parks and a recovery in advertising. The release of “Finding Nemo”, a huge Pixar hit, and “Pirates of the Caribbean”, a Disney film, on DVD and video will boost cashflows next year. But if anything goes wrong at Disney, says one rival media mogul, the fact that Messrs Gold and Disney are picking away at Mr Eisner will make things much worse for him—for instance if shareholders win their lawsuit over an estimated $138m severance payment to Michael Ovitz in Disney's fiscal year 1997. The two men may

have more to reveal about Mr Eisner and his friends on the board: Mr Gold wants Disney to publish letters he wrote to the directors, which he says contain “new information”. The next stage will be to nominate a slate of independent directors at the annual general meeting in March.

Investment bankers hope that the resignations of Messrs Gold and Disney will hasten a bid for Disney. The likeliest buyers are Comcast, a cable firm, and two internet firms, Yahoo and InterActiveCorp, whose bosses, Terry Semel and Barry Diller, are entertainment industry veterans. Given next year's likely performance, says one holder of Disney shares, its assets are now cheap and vulnerable. Mr Gold says that he has no intention of bringing in a hostile bidder. He may find that nothing else will oust Mr Eisner.

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New Zealand's film industry

Praise the Lord

Dec 4th 2003 | WELLINGTON
From The Economist print edition

But will there be cinematic life after Lord of the Rings?

“WELLYWOOD,” the term that some headline writers have coined for the chunk of New Zealand's NZ$500m ($320m) film-production business based in and around its capital, seems too silly to last. Even so, fresh from last week's ticker-tape parade and premier for Peter Jackson's “The Lord of the Rings: The Return of the King”, Wellington's film makers are enjoying their close-up.

All three “Rings” movies were scripted, designed, costumed, filmed, edited and dubbed in New Zealand. The 48,000 props—from prosthetic limbs and Hobbit feet, to armour, swords, cloaks and daggers—were forged, sewn and spit-and-glued by local artisans coordinated by Wellington's Weta Workshop. Computer-generated monsters and special effects were rendered by Wellington's Weta Digital. The musical scores and sound effects were mixed at Wellington's The Film Unit. Even the algorithm that allows a few evil grotesques to swell into an army of several thousand grotesques came from a Kiwi computer programmer, Stephen Regelous. Mr Jackson—who on occasions had an estimated 20,000 people working for him (including extras for non-computer generated crowd scenes)—was briefly the largest private employer in New Zealand. No wonder he got a parade.

But will “Lord of the Rings” now lead to bigger and better things for New Zealand film? There are some grounds for hope. Besides “Rings”, Gwyneth Paltrow's movie about Sylvia Plath, “Sylvia”, was shot on location in New Zealand, as was a new Tom Cruise epic, “The Last Samurai”. “Whale Rider”, a home-grown, independently produced New Zealand movie, has become an art-house hit in America.

More significantly, Mr Jackson has not squandered his advantage. Just as “Star Wars” director George Lucas built up his movie effects company, Industrial Light and Magic, away from Hollywood—400 miles (645km) north in San Rafael, California—Mr Jackson has constructed, at a large cost to himself, the best film post-production facilities money can buy, 6,700 miles from Hollywood. His NZ$30m facility at The Film Unit will be hired out to film producers willing to decamp to Wellington to edit and dub their movies.

To keep busy, Weta Digital, Weta Workshop and The Film Unit can count on Mr Jackson, who will start to shoot a remake of King Kong in New Zealand next month (despite the country's scant supply of jungles or skyscrapers). But the only other big-budget productions currently on the books in New Zealand are “Without a Paddle” (billed as “a remake of ‘Deliverance', but as a comedy”), and a new series of “Power Rangers” episodes for TV—hardly enough for Sue Thompson, who runs The Film Unit, to realize her vision of increasing film production turnover to NZ$900m by 2007.

Whether Wellywood can attract more foreign film makers will depend, ultimately, on things that Ms Thompson, and even Mr Jackson, cannot control. Wellington's technological prowess and now well-trained crews aside, all the blockbusters made in New Zealand in the past decade have come for three reasons: because a Kiwi producer or director was committed to the place; because New Zealand offered an unbeatable location (for example, in 2000, “Vertical Limit” cast New Zealand's Mount Cook as the Himalayas); or, crucially, because it was cheaper. When Mr Jackson decided make his trilogy here, the New Zealand dollar cost 41 American cents. It now costs 64 cents. Off the record, even sources close to Mr Jackson concede that today's exchange rate would probably be enough to stop “Lord of the Rings” being made in New Zealand.

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Boeing, continued

Tanked up

Dec 4th 2003 | CHICAGO, SEATTLE AND WASHINGTON, DC
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Why Phil Condit, the boss of troubled Boeing, had to go

WORKERS at Boeing's factories around Seattle were not so much disturbed by the sudden resignation of the company's chairman this week as anxious about their future under his successor. Whereas Phil Condit was liked and respected, many Boeing workers regard Harry Stonecipher with a mixture of fear and loathing. As president of the company after he came in with the takeover of McDonnell Douglas (which he ran) in 1997, he applied the financial discipline that led Boeing to shed about 40,000 workers.

In Chicago, Mr Condit became a local hero after putting the city back on the business map by moving Boeing's head office there from Seattle. One study estimated that Boeing's presence should bring $4 billion to Illinois over the next 20 years. But the city behind his departure is Washington, DC, where Boeing has fallen out with its biggest customer, the Pentagon.

All summer a row has brewed over one Boeing contract after another. First came the revelation that Boeing had held on to 25,000 documents belonging to a rival, Lockheed Martin, for several years after it dismissed two former Lockheed employees for stealing them. The two employees have been charged, but the Department of Justice is still conducting a wider inquiry and the Pentagon cancelled Boeing contracts worth over $1 billion.

The latest running sore has been Boeing's deal to supply America's air force with air-to-air refuelling tankers. Although Boeing says the departure of Mr Condit has nothing to do with tankers, this is the deal that put Boeing in such bad odour. One of Mr Condit's last acts was to fire his chief financial officer for unethical conduct relating to this deal. The board then accepted Mr Condit's resignation in an attempt to draw a line under the scandals.

This week the deputy secretary of defence, Paul Wolfowitz, ordered a “pause in the execution” of the deal, which probably translates as “wait until the fuss dies down and then proceed, probably on Christmas Eve when no one is looking”. The original deal was for the air force to lease rather than buy 100 planes for about $22 billion. That way the air force got the planes more quickly than if it had to shell out to buy them, and Boeing got a juicy contract that would keep open the production lines to build a converted version of a passenger jet which airlines had stopped buying.

The contract was bound to cause a row. The price was some $5 billion more than the cost of buying the planes outright. There was no competition, because Airbus (the only possible alternative) did not have a plane ready, and Congress was cut out of the normal scrutiny process because the lease counted as an operating expense not an investment. Some of the financial engineering involved smacked more of Enron than of usually conservative Boeing, as the air force sought to keep the aircraft, in effect, off its balance sheet. This is common in countries such as Britain, where Boeing is fighting Airbus in an even more convoluted air-tanker competition, which Boeing now seems doomed to lose.

Senator John McCain, a respected Republican, has been attacking the deal since its inception two years ago. His campaign against what he describes as “corporate welfare” for Boeing led to a series of investigations by congressional watchdogs. In the age of e-mail, these have dredged up some pretty unsavoury dealings. Some 31 Boeing executives personally contributed to the campaign funds of Senator Ted Stevens, the man who squeezed the tanker deal into an appropriations bill. Other congressmen only backed the deal after receiving promises of sub-contracts for firms on their home patch. Even for seasoned Beltway observers, the tanker lease is seen as pure pork barrel.

The deal has already claimed the heads of Boeing's top two executives. What fate now awaits its champions on Capitol Hill and in the Pentagon, such as Air Force secretary James Roche, who were so

keen to push it through? An even more important victim could be all future attempts to use public-private partnerships to make the military more efficient.

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Going bust in Europe

Alstom's last stand

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How France changes its bankruptcy laws might affect all European firms

THERE is no end in sight to the troubles of Alstom, a big European engineering group that lurched off the rails two years ago. A rescue package for the largely French group was agreed by European regulators in September and approved by shareholders last month. But Alstom's shares are languishing amid ongoing uncertainty about its chances of trading its way back to health (see chart). Tragic accidents, such as recent fatalities at the shipyard where Alstom is building the Queen Mary II, have further dented confidence.

Alstom's near collapse is having a big impact in France. Thousands of jobs are at risk. Under pressure, the French government is reforming bankruptcy laws, turning an old-fashioned and punitive system into one rather like America's Chapter 11, which gives firms protection from creditors and the ability to borrow more while they sort themselves out. When the changes come in next year, there will be far-reaching effects for French firms including Alstom, but also, more gradually, for their European competitors.

Current French law treats failing firms harshly. Directors are personally liable if they bankrupt a company. Banks and other creditors are wary of advancing a financial lifeline in case they are accused of “abusive lending”. The result, says Edward Eyerman of Fitch, a credit-rating agency, is that around 95% of French firms are liquidated after they default on loans. America's Chapter 11 restores 95% of failing firms to health (at least for a while)—typically saving more of the value in the firm for investors than would result from swift closure and liquidation.

Introducing a Chapter 11-style system in France should shift the economic burden of failed firms to the financial markets. In the past, France has seen a series of state-led bailouts, at vast expense to tax payers. The government's initial efforts to help Alstom involved just such a method, but the deal was resisted in Brussels.

Even after approving a revised deal, Mario Monti, the competition commissioner, is following the rehabilitation effort closely. According to Mr Eyerman, he is acting in a way similar to how an independent judge would act in a Chapter 11 proceeding, giving Alstom short-term protection from creditors so that its managers can try to show that the firm is worth financing in the capital markets. Mr Monti has also limited the state's role, so that Alstom's managers have a chance to restructure free from political interference.

Mr Monti faces multiple pressures in the Alstom case. Rejecting state aid is one thing, but he must also bear in mind that, in the event of Alstom going bust, there would be a nasty loss of competition, particularly in the sensitive transport and power sectors. Competitors such as Siemens have snapped up some of Alstom's assets. They would love to grab more.

Alstom's workout is in stark contrast to that of ABB, a rival engineering giant that also teetered on the brink after poor management and financial incompetence. During its (ongoing) recovery it received no help from the state, relying instead on support from its banks. Indeed, a series of corporate collapses in Europe has seen banks taking the lead in trying to find solutions that avoid break-up—for example, at Vivendi, Ahold and Corus.

This is where Alstom might alter the fate of all European businesses. If its collapse does lead France to create and consistently apply a rehabilitation system for insolvent firms, then there will be much greater pressure for Europe-wide rules to achieve the same outcome. Along with growing pressure from investors, who want clearer rules on where they stand in the pecking order in the event of corporate failure, this could result in a more sensible, market-sensitive approach to bankruptcy throughout the European Union.

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Business manners

Anything but love, actually

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What should bosses give their staff for Christmas?

BEFORE those office Christmas parties begin in earnest, glance at the *Harvard Business Review*. In its December issue it has an interview with “Miss Manners”, Judith Martin, whose syndicated column advises millions of Americans on vital matters of etiquette—such as whether to wear diamonds before dark or to write college applications in pink ink. In the HBR, Miss Manners argues that the American workplace is now too informal for its own good. Workers are dangerously confusing colleagues and friends. “Office collections for the umpteenth bridal or baby shower have destroyed the sense of boundaries that characterises professional behaviour.”

America's informal business practices have spread so widely that such sentiments can strike a chord anywhere these days. Where they do, employees need to be particularly wary of Christmas. It is a dangerous time for firms that go along with the fashionable belief that workers are most productive if freed from the constraints that etiquette imposes. Not only could the traditional grope in a dark corner at the office “do” end up in dismissal and a criminal record these days, but the intra-office gift-giving rituals can also lead to trouble.

In the current British hit movie, “Love Actually”, the story (in so far as there is one) revolves around the build-up to Christmas. One character, the brother-in-law of a British prime minister, is the boss of a London-based business which convincingly proves that the relationship between a firm's productivity and the personal proximity of its employees is an inverse one. All his staff are so busy inter-relating that they have little time for anything else. When the boss buys his flirtatious assistant a necklace for Christmas and his wife a Joni Mitchell CD, it is almost the end of his marriage.

What Christmas gift does Miss Manners advise bosses to choose for their assistants? Try giving them a bonus, she suggests. And, dare we suggest, just watch their productivity soar.

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Fuel cells

A new kind of gas station

Dec 4th 2003 | NEW YORK AND SACRAMENTO
From The Economist print edition

Oil and car firms are finally agreed on how to make fuel-cell cars a reality

Get article background

AS A United Nations conference on climate change opened in Milan this week, the Bush administration restated its opposition to the Kyoto Protocol. Paula Dobriansky, America's undersecretary of state for global affairs, criticised the treaty as “an unrealistic and ever-tightening regulatory straitjacket”. The right way to tackle warming greenhouse-gas emissions was to embrace new technology that transforms how energy is produced and promotes, not impedes, economic growth.

One such technology is the fuel cell, whether used to power cars, heat houses or replace conventional batteries in mobile phones and laptops. A fuel cell is a sort of battery that produces electricity if it is fed hydrogen. The hydrogen combines with oxygen in the air to produce electricity and hot water. Unlike old-fashioned electric cars, the battery in a fuel-cell electric car should never go flat, provided it does not run out of hydrogen fuel.

There are two big obstacles to fuel cells becoming the green saviours that the Bush administration, among others, hopes for. The cost of manufacturing a fuel-cell electric engine needs to fall by 90% to compete with petrol engines, and each country using fuel cells would need a completely new distribution network to deliver the fuel needed for the cells. Mass production is likely to lower engine costs, perhaps sooner than many expect. But the infrastructure problem has always seemed even more formidable.

Sceptics have long insisted that building such a delivery system would prove too costly: $100 billion in America alone. But the oil giants and the carmakers, once hostile to a new technology that threatens their investment in conventional vehicles and fuel-delivery networks, could prove the doubters wrong. Pushed by environmental regulators in California—where the new governor, Arnold Schwarzenegger, wants to build a “Hydrogen Highway”—they are now getting together to plan an affordable alternative strategy: tapping into the existing nationwide natural-gas grid to produce hydrogen gas for fuel cells at existing petrol stations (known by Americans, confusingly, as “gas stations”). This compromise could be a crucial milestone on the road to a hydrogen economy.

As evidence of the increasing probability of change, Bill Ford, boss of Ford Motor and great-grandson of the company's founder, stated recently that “fuel cells will finally end the 100-year reign of the internal combustion engine”. Indeed, hydrogen-powered buses have already taken to the streets of Vancouver, Stuttgart, Chicago and Sacramento. London will soon have some fuel-cell buses. Fedex and UPS are trying out fuel-cell delivery-trucks.

These fleet vehicles work out of central depots, where storage of hydrogen is simple. The vehicles have a predictable range. So refuelling on the road is not critical. Getting fuel cells into private cars was bound to prove far trickier, and take longer, due to the need for refuelling points to be as ubiquitous as today's petrol stations.

Yet most of the big global car firms are within a couple of years of selling fuel-cell vehicles: General Motors, Ford, Toyota, Honda and DaimlerChrysler are leading the way. The main reason? From 2008, they must ensure that 10% of their new cars meet California's “zero emissions” law. If they do not, they could risk heavy penalties or possibly be shut out of the world's fifth-biggest economy.

Until now, the likeliest solution to the car-refuelling problem was to make hydrogen from petrol. The big oil companies wanted this, as it would minimise the impact on their business. The idea was that tiny chemical plants on board vehicles would convert gasoline to hydrogen for the fuel cell. Lobbied hard by

Exxon Mobil, the world's biggest oil and gas company—and the most curmudgeonly on matters green—America's Department of Energy spent millions on researching how to produce hydrogen efficiently from gasoline. Another variation used methanol: DaimlerChrysler spent ten years and $1 billion on this before giving up. Nearly all of the big car firms have now ditched these clunky solutions, since extracting hydrogen from petrol or methanol adds considerable weight and complexity to cars, yet still produces some tail-pipe emissions.

Oil firms and carmakers are now hoping to feed the fuel cell directly with hydrogen. Filling stations would be hooked up to the natural-gas grids that criss-cross all rich countries, and reformer plants (being developed by United Technologies and others) would then extract the hydrogen from this hydrocarbon gas at the petrol station, allowing drivers to “fill her up”. Honda, Japan's second-largest car firm, and Plug Power, an American fuel-cell firm, have even developed an “energy station” that makes hydrogen for a fuel-cell car from natural gas at home—providing heating and water for domestic use as well.

The hydrogen highway that's the best

GM now sees the potential in turning gas into hydrogen. In a new report, it argues that a roll-out of 12,000 hydrogen pumps in urban areas and along main highways could give 70% of America's population reliable access to the fuel at a cost of only $10 billion-$15 billion. Larry Burns, GM's head of research, compares that to the $160 billion (in today's money) spent by federal government on building highways nearly five decades ago and concludes: “Fuel infrastructure will not be the show-stopper for fuel cells. This is quite doable.”

Now all the carmakers need to “do” is drive down the costs of fuel cells from their current level—GM claims $500 per kW but most experts say higher—to the $50 per kW of petrol or diesel engines. That will take some years. Even so, thanks to the power of mass production to diminish costs and the desire of politicians seeking to appease activists, the first green cars could soon be appearing in your rear-view mirror.

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Face value

The acceptable face of Russian business?

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AFP

Anatoly Chubais is being tolerated by the Kremlin, for now

THE question that Russians ask about Anatoly Chubais these days is, “will he be next?” When Mikhail Khodorkovsky, the boss of Russia's biggest oil firm, Yukos, was arrested in October after a four-month-long series of probes into his firm and associates, other Russian business magnates prudently kept their mouths shut or muttered vaguely that it did not affect them. Not so Mr Chubais. As he repeated this week: “We believe that the actions undertaken of late in regard to Yukos are serious signs indicating a change of course in the country, and they are dangerous signs. We think it affects the fundamental principles of the Russian state and economy.”

This is not just a royal “we”. Most of Russia's business “oligarchs” made their money in similar ways to Mr Khodorkovsky, grabbing state assets in the complex and legally murky privatisations of the mid-1990s. Some think that as long as they do not wield too much political influence—as Mr Khodorkovsky did, to his cost—they and their money will be safe. But many fear that the move against Yukos marks the start of either a more interventionist industrial policy or, worse still, an attempt by a few high-placed government officials to grab assets for themselves.

Mr Khodorkovsky's experience suggests that Mr Chubais might be unwise to become the mouthpiece of a cowed but angry business community. After all, the Yukos boss may yet lose his freedom for years, along with his firm. This week, to add to the pressure, Russia's tax inspectorate sent prosecutors details of tax-avoidance schemes (albeit legal) that have saved Yukos about $5 billion. Sibneft, a smaller firm which was on the verge of merging with Yukos, last week called a halt to the deal minutes before a crucial board meeting. The speculation is that its owner, Roman Abramovich—now best known for his purchase of Chelsea, a fashionable London soccer team—is trying to win control of Yukos, with the Kremlin's approval.

Mr Khodorkovsky's problems began when he continued to throw his weight around in politics despite being warned off by the Kremlin. After his election as president in 2000, Vladimir Putin had struck a deal with the oligarchs whereby, if they stayed away from politics, they would be allowed to keep the enormous wealth they had secured during the corrupt privatisations of the 1990s—many of which were overseen by a then Deputy Prime Minister Chubais.

Mr Chubais is running in this Sunday's elections to the Duma, the lower house of parliament, for the Union of Right Forces (SPS), a pro-business party that he co-founded. At first, his decision to run appeared to be a sign that SPS, which has traditionally supported the Kremlin on free-market reforms,

was about to become even more obedient. Now Mr Chubais seems to be distancing himself from the government.

And he has long courted the support of business for his political activities. His privatisation strategy was designed to ensure that the oligarchs backed the re-election of Boris Yeltsin as president in 1996, and the election of Mr Putin in 2000. In his current job, as head of the state-owned electricity company, UES, he has also tried to help his business friends, planning the break-up and privatisation of the firm in a way that would let some of them gain control of its best generating assets. That provoked an outcry from minority investors, and led Mr Putin to intervene to bring Mr Chubais into line. Now he is pushing “liberal imperialism”: the idea that it should be through business, more than foreign policy, that Russia exerts its influence abroad. (UES recently bought Georgia's main electricity-distribution firm.)

Nor are Mr Chubais's other political utterances obviously designed to promote peaceful relations with the president. It is hard to imagine that Mr Putin was pleased by a recent interview in which Mr Chubais said that “the main thing we have to think about now is the construction of a post-Putin Russia.” (Assuming he is re-elected next year, Mr Putin will not have to retire until 2008.) Indeed, Mr Chubais's criticism of the Yukos affair has recently become somewhat more muted, suggesting that he may have been read the riot act.

Corporate Kremlinology

Deducing what, exactly, Mr Chubais is up to, and whether Mr Putin is likely to tolerate it, is a game of speculation on a par with Soviet-era Kremlinology. Russians wonder if Mr Chubais is behaving so boldly because he thinks he is about to be fired from his job, because he wants to be fired or even because he is sure he won't be. Is he running for the Duma now because he wants to leave UES before its restructuring is done? That would look bad. What's more, UES is itself a useful political tool. In recent weeks, millions of Russians have received letters from Mr Chubais, as head of UES, promising to keep electricity-price rises below inflation until 2006, and telling them that since November 1st tariffs have been cut by 20% in five urban regions—coincidentally, where most SPS voters live. Or does he merely want to raise SPS's profile while taking a firmer grip on the party—to the chagrin, reportedly, of some of its other members—as part of a long-term plan to become President Chubais?

If Mr Chubais is to keep his job, it will be because he is more useful than threatening to Mr Putin—and to other senior Kremlin officials who do not always do Mr Putin's bidding. Overall, Mr Putin probably has little to fear from him. Mr Chubais is rich but, by dint of remaining in the public sector, certainly no oligarch. And, thanks to his role in Russia's corrupt privatisations, he is too unpopular to win election anytime soon—though, aged only 47, time is on his side. All of which may mean that Mr Chubais is not, in fact, distancing himself from the Kremlin, but merely reminding it that he is a force to be reckoned with; and also reminding business people that for talking to the powers-that-be, he is their man. If that is his strategy, it is quite a gamble.

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Indian railways

There's no such thing as a free ride

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Corbis

India's call centres, software firms and drugmakers are booming. But much of the rest of the country's economy remains mired in bureaucratic and ideological constraints. To gauge the difficulties of putting India's economic reforms on track, consider its railways, once the vanguard of modernisation

UNUSUALLY, India's Parliament hears two annual budget speeches. One, delivered by the minister of finance, goes over the normal boring stuff: health; defence; education; taxes; tariffs and so on. The other, delivered a couple of days earlier, covers the railways. The survival of this bizarre system, introduced by the British colonial government in 1924, tells you two things about India's railways: first, at a time when many railway systems around the world are being privatised, or at least run as independent corporations, India's remain an arm of government; second, the system is both huge—by one estimate the world's largest commercial enterprise in terms of its employees—and enjoys a unique national importance.

It also, however, shares many of the troubles that have afflicted other state-run railway networks in recent years. Most importantly, it does not make enough money to meet its investment needs. Its "operating ratio"—operating costs as a proportion of revenues—which had climbed close to 100% by the beginning of this century, has fallen to 92.5%. But that is still not enough to cover depreciation, maintenance and expansion. Nor can the railways rely on indefinite government bail-outs at a time when India's overall fiscal deficit (at more than 10% of GDP) risks becoming unsustainable. Yet the railway system has been losing customers to an improving road network, making it hard to see how its finances will ever improve.

On top of this, the railway system is under attack for its safety record. Its own statistics belie the impression given by the frequent reports in Indian newspapers of an especially accident-prone system. Measured per millions of train-kilometres travelled, India has fewer rail accidents than Japan (0.55 as opposed to 0.65). But, according to its own white paper on safety produced this year, it suffers a far higher death rate than Japan (0.8 per billion passenger-kilometres, compared with 0.1).

The railways' critics accuse it of making no distinction between unviable and commercial projects. On one estimate, 50% of its lines are under-used and 30% are over-used—primarily the main "high-density" inter-city corridors. These days, the most lavish "strategic" projects, such as a rail link to the Indian-controlled Kashmir valley that, it is hoped, might dampen separatist sentiment there, are paid for out of

another government budget. But the railways are burdened, says a former senior railways executive, by a system which demands that the minister spread his funds thinly in response to pressure from members of Parliament and state assemblies. As a result, many projects get a “token allocation”; but few are ever completed.

Not all the criticism directed at the railways is fair. But, because they were an essential part of the attempt in the 1950s and 1960s to impose a planned socialist economy on India, their reform has also come to be seen as an essential part of that economy's dismantling. Since a wave of liberal, market-oriented measures in the early 1990s, debate about how to reform the railways has intensified.

A glorious past

Earlier this year, India celebrated the 150th anniversary of its first train journey. On April 16th 1853, a locomotive pulling 14 carriages and 400 people left what was then Bombay to a 21-gun salute and trundled to Thane, 34km (21 miles) away. The journey took about 75 minutes.

From there, the network grew fast. Some of it was built by the British Raj, some by the princely states, such as Bikaner and Jodhpur, which retained their notional independence. Many of the network's main trunk routes were laid by private companies under schemes that would now be described as “build-operate-transfer”. Passenger numbers increased from 24m in 1901 to 42m in 1917. By 1922, almost 60,000km of track had been laid. In a controversy that would find echoes in contemporary India, the rail operators, which enjoyed a government-guaranteed minimum return, were suspected of exorbitant profit-gouging. In 1924, the entire system—its construction, operation and financing—was brought under the control of the British Indian government.

The shape of the network had been dictated mainly by the commercial, industrial and administrative requirements of the British empire, as well as by the vanity and convenience of individual maharajahs. But it came to be credited with an important role in integrating not just the Indian economy, but also in helping to create the “nation” itself.

Not everybody welcomed it. In 1909, Mahatma Gandhi, hero of India's independence struggle, blamed the railways (along with lawyers and doctors) for impoverishing the country. Railways, he argued, spread famine because they helped farmers to sell their grain to the dearest market. They “accentuate the evil nature of man. Bad men fulfil their designs with greater rapidity.”

Independent India, however, took to the railways with gusto. It lavished money on modernising a system that, at the time of independence in 1947, had only steam locomotives. Today, Indian Railways is the largest organisation in the country, both in number of employees—more than 1.5m—and in capital invested, some $10 billion. It has 63,000km of routes, 7,700 locomotives and nearly 7,000 stations. It carries 1.4m tonnes of freight and 14m passengers every day—equivalent to moving all of India more than four times a year.

It is also a tottering tower of vertical integration: its units are engaged in designing, making and maintaining rolling stock; in building work; in running schools, hospitals, housing and hotels; and in catering, both for passengers and staff. Besides those it employs directly, Indian Railways issues licences to 36,000 uniformed porters and 11,000 authorised hawkers. Tens of thousands more—shoeshine boys, touts, scavengers, beggars and auto-rickshaw drivers—congregate around stations to make their unlicensed livings.

Sorting out the subsidies

Indian Railways is “one of the most studied institutions on the planet” according to a report published in 2001 by a government-appointed group chaired by Rakesh Mohan, an economist who is now deputy governor of the Reserve Bank of India, the central bank. The Mohan report is a damning indictment of the way that Indian Railways is run, and a prolonged argument for “radical structural change”.

Many of its conclusions have since been endorsed by further reports from the World Bank and the Asian Development Bank. None goes the whole neo-liberal hog and promotes wholesale privatisation. All, however, agree that the railways should be run on commercial lines and that, if the government wants to subsidise services, then the subsidies should be transparent.

This simple conclusion has a number of far-reaching implications. It means that Indian Railways should start divesting itself of “non-core” activities, such as catering and manufacturing; that it should cut staff numbers drastically; that its top management, a seven-member Railway Board, should shed its conflicting responsibilities as regulator, policymaker and boss; and that it should start producing intelligible accounts. Similarly, it should establish standard commercial criteria for its investments. But above all, it should stop using its freight customers to subsidise passenger fares.

Many changes designed to meet these challenges are chugging along sedately. But because of its history, its scale and its usefulness to so many political interests, Indian Railways presents a special challenge to reformers. The roots of that challenge lie in an addiction to vote-catching subsidies, a fear of the power of organised labour, a deep suspicion of privatisation, and a reluctance to lose the power to dispense political patronage.

“Trains cannot be run for charity,” wrote Gandhi in 1947. The Mahatma, by then clearly a convert to rail travel, was incensed that so many of his countrymen were fare-dodgers. Ever since, many Indians have taken cheap rail travel for granted. And there are railway officials who support them. One of them says “we perceive ourselves as being not a transport organisation, but part and parcel of the running of this country.”

The railway, he says, has to transport not just urban commuters and tourists, but also landless labourers in search of distant work and ascetic pilgrims on their way to the holy city of Haridwar. At election time, it has to shift voting machines, politicians, officials, paramilitary guards and voters. The job extends to “the preservation of democracy itself”.

All well and good, say the railway's critics. But why does the freight customer have to foot the bill? Passenger trains account for nearly two-thirds of railway services, but produce just one-third of

revenues. According to the railways' own figures, moving one passenger one kilometre made a loss of 15 paise ($0.003) last year. Shifting a tonne of freight one kilometre made a profit of 16 paise. As a result, the ratio of passenger fares per person-kilometre to freight rates per tonne-kilometre is among the lowest in the world: about 0.3, compared with 2.2 in Japan. China may be a more instructive comparison. Between 1994 and 1998, it raised passenger fares by 75%, lifting the passenger-fare to freight-tariff ratio from 0.9 to 1.2.

What logic demands

Y.P. Anand, a former chairman of India's Railway Board, argues that a move in that direction is logical in India, where passengers, by and large, are becoming more expensive, as they demand more space and comfort, while freight by contrast costs less, as improved technology leads to better and faster use of space. One consequence of Indian Railways' present bias, according to a rough calculation by the World Bank, is that freight tariffs could be reduced by more than 40% if its social burdens were paid directly by the user or the government. Manashi Roy of the Confederation of Indian Industry, a private-sector lobby in Delhi, says that for some users it has become cheaper to import coal and steel than to move it internally.

Yet in his budget in February this year, as last year, Nitish Kumar, the minister of railways, announced that there would be no increase in passenger fares. He also refrained from an across-the-board increase in freight rates. In practice, however, Indian Railways has been tinkering with the distortion in the tariff structure by simplifying categories and classes. It has managed a stealthy 14% rise in passenger fares over the past three years, against a mere 2% rise in freight charges.

The need for stealth is obvious. In his own budget speech, India's finance minister, Jaswant Singh, proposed a modest dent in the subsidies poured into both food and agriculture by announcing an increase in the price of fertiliser. At once assailed by his foes as anti-farmer and his friends as anti-voter, Mr Singh was forced to retract and to leave the subsidy intact.

Indian politicians are addicted to a tax-and-subsidy regime of bewildering complexity, and deterred from tampering with it by a crowded electoral timetable. The Mohan report, for example, estimated that 15% of Indian railway passengers, many of them railway workers, were enjoying discounted fares. Among the 42 categories of people listed as eligible for concessions are students, boy scouts, the elderly, the very poor, war widows, nurses, journalists and some “persons taking part in mountaineering expeditions”. Even some sorts of freight—fruit and vegetables and salt, for example—are subsidised.

The tariff structure has, predictably, led to a loss in market share to the roads, oil pipelines and coastal shipping. The railways' 80% share of the freight market in the 1950s has fallen by half and, some studies suggest, might fall to 25% as the roads improve further. In particular, a so-called “golden quadrilateral” project aimed at linking with four-lane highways the four big cities of Delhi, Kolkata, Chennai and Mumbai (the last three are the Calcutta, Madras and Bombay of yore) poses a threat not just to freight volumes but, through high-speed buses, to passenger numbers as well.

The railways say they are meeting the challenge. Freight volumes grew 4.5%, to 515m tonnes, in the last financial year ending in March. R.K. Singh, chairman of the Railway Board, boasts of an even better performance in the first half of this year, with an increase of 18m tonnes. Critics, however, say that the railways are not expanding nearly fast enough to meet the needs of an economy that is expected to grow by as much as 7% this year, a rate that optimists say can be sustained for years.

The railways employ some 6% of the workforce in India's “organised” sector, and its managers are proud of their record of good industrial relations. This, say cynics, is not surprising. Their workers are civil servants, benefiting from the awards of government pay commissions. Indeed, Mr Anand, the former Railway Board chairman, blames the awards of the fifth such commission, for messing up the railways' finances. Mounting pension liabilities cause particular concern. By 2002, the railways had 73 pensioners for every 100 employees, and pensions consumed nearly 15% of revenues. Overall staff costs are more than 40% of gross traffic compared with about 15% in China, where the railways have shed non-core businesses.

Indian Railways scores badly in most international productivity league tables. Again, its officials say improvement is under way. It aims to have reduced staff numbers to 1.2m by 2010. That reduction, of a fifth, is the minimum the Mohan report thought necessary by 2008, and it is not clear how it will be achieved. Since 1994, the railways have been shedding staff through natural attrition at the rate of only

about 2% a year. This year, say officials, there will be no reduction in numbers, in order not to jeopardise safety standards. The workforce has been promised that reform will not entail a single sacking. It is important, says one manager, to keep the support of the staff. “These workers can cripple the economy.”

Limited ambitions

Fear of the workers' reaction is one reason why politicians and civil servants tread so gingerly around the issue of privatisation, not just in the railways but in other public-sector operations as well. In September, for example, a petition from oil workers helped to win a ruling from the Supreme Court stalling the government's sale of two oil companies. For the railways, ambitions are limited to “corporatising” non-core operations so they can become distinct profit centres, and the introduction of some private-sector minority participation. A number of new projects are being undertaken by specially formed joint-ventures. ConCor, a container company launched in 1989, and since listed on the stockmarket, is something of a model.

Reuters

Each of them carried at a loss

More recently, in 2001, the management of catering contracts was “hived off” to a subsidiary, IRCTC, which is showing what can be achieved when the railways' managers are set free. Entrepreneurial staff at IRCTC decided that it should go into the business of selling tickets on the internet. By this September it was selling 67,000 a month. This is trivial compared with the 500,000 reserved tickets that the railways sell every day, but it nevertheless makes ICRTC the biggest e-business in India.

Stalk the long corridors of Rail House in Delhi and it is hard to believe that this is the headquarters of the organisation dissected by the Mohan report and others. Whereas Mr Mohan talked repeatedly of a “financial crisis”, and the World Bank argued that the choice is between “significant change” and “financial and operational collapse”, Mr Singh, the chairman, says the Mohan report is still “under scrutiny”. But he rejects its call for a “high-growth path”, nor does he see the need for a separate regulator since “we are the only player in the field.” In other words, Rail House is in the grip of what the Mohan report called “repairists”, not “re-inventors”.

Some of the discrepancy between the two extreme views of Indian Railways is explained by the success of reforms introduced since the Mohan report, and the coming into effect of some that were initiated earlier. Partly, it may be, as Mr Anand argues, that the report fell into one of the traps it itself identified, and confused financial performance with operational efficiency. The railways' intricate network of subsidies might be designed to obscure any link between the two.

But much of the disagreement is between economists looking at the railways as a business, and dedicated civil servants looking at what they still see as a public utility and social service. As one senior railway official, who believes he works for “a healthy, growing railway”, puts it, “if you moved to a business model, Indian Railways would collapse.” As with so much of the Indian public sector, re-invention will be late in arriving.

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Currencies

A faded green

Dec 4th 2003
From The Economist print edition

The dollar will need to fall further to eliminate America's imbalances

Get article background

SHADES of peach adorn America's recently redesigned $20 note, but currency traders care little for pretty colours. The dollar has steadily been losing value in the foreign-exchange markets. This week it reached its low against the euro since the single European currency was launched in 1999, breaking through $1.20. The dollar has fallen by 31% against the euro from its peak in July 2001. Recently it has also hit a three-year low against the yen and a five-year low against sterling.

It may seem curious that the dollar is falling when America is enjoying a remarkable spurt of growth and Europe looks far less perky. America's GDP grew at an annual rate of 8.2% in the third quarter. The Institute of Supply Management's widely watched index of manufacturing activity hit a 20-year high in November. Meanwhile, the euro area's economies are on the mend, but are expected to grow by only 0.5% this year and 1.8% next, according to *The Economist*'s monthly poll of economic forecasters.

However, currencies are not economic virility symbols, but assets on which investors expect a return. The dollar used to be buoyant because investors expected to make more from dollar assets than from those denominated in other currencies. Now they are not so sure. Their worries over America's twin deficits, on the current account and the federal budget, loom large. With a current-account deficit of 5% of GDP, America must borrow $2 billion each business day. Tax cuts, spending on the war in Iraq and a new scheme to provide prescription drugs to the old are dragging the government's books into disarray.

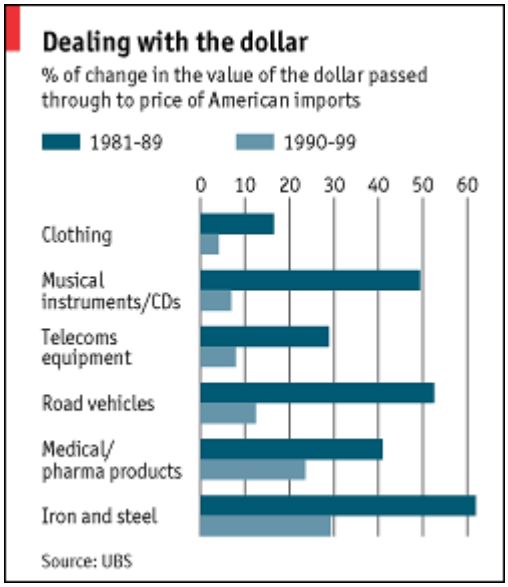
How much further might the dollar fall? Predicting the future price of a currency is a mug's game. But there are good reasons to believe that over the medium term the dollar could drop a lot lower, especially against the euro. Whether that will have the desired effects, in reducing America's imbalances, or in causing the expected chaos in Europe's economies, is a different question.

A stronger euro should be bad news for European firms, even if it means cheaper Florida holidays for their employees. A rise in the euro against the dollar causes exports from European firms to become more expensive relative to American ones, cutting into Europe's sales. Similarly, American firms' products become relatively cheaper, both for Americans and for foreign buyers. By creating more exports and curbing imports, a weaker dollar should thus help to cut America's huge current-account deficit.

Or so the textbooks have it. In the past, a falling dollar has indeed reduced America's imports. In the 1980s, the last time America had such a large current-account deficit relative to GDP, an agreement to let the dollar depreciate helped to reduce America's consumption of Japanese cars and Swiss watches. This made for a fairly painless adjustment for America, if not for its trading partners.

But there is reason to think that these days currency movements are not as effective as they once were in bringing economies into balance. A recent report by George Magnus of UBS, an investment bank, doubts that a sliding dollar will do much to eliminate America's trade and current-account imbalances.

Weakened link



First, in an increasingly integrated global economy, companies' pricing power has been eroded around the world. In addition, low inflation has made price increases more obvious. So it is harder for firms to pass on cost increases of any sort, whether rising input prices or higher wages for unionised employees. In the same way, it is more difficult for a European car company, say, to raise its prices in America in response to a stronger euro. According to a study cited by Mr Magnus, the ability to pass on the effects of a stronger currency has been waning in recent years (see chart).

Other factors also weaken the power of currency movements. Rather than try and raise prices when their “home” currency strengthens, foreign firms may hold prices and accept lower margins, especially if they think the currency will weaken again or if they are determined to maintain market share. Manufacturing operations that are spread across countries make it easier for firms to match their dollar sales with dollar costs, reducing the effects of currency movements. And there is often a long delay, perhaps of more than a year, before consumers and producers adjust to changes in prices. For all these reasons, the dollar may have to fall much farther before America's imbalances are unwound.

Perhaps this is why European stockmarkets seem to have shrugged off the strong euro, rising this week to their highest levels this year. According to a report by Ian Scott of Lehman Brothers, this is all the more noteworthy when listed European companies have seen the proportion of their sales going to America rise to 17% this year from only 10% in 2000. This should make them more sensitive to the falling dollar. It may be, argues Mr Scott, that European shares look so cheap that a rising euro is not enough to put investors off.

However, the euro's strength might start to pinch soon—especially if the European Central Bank does nothing to offset its tightening effects. Dollar bulls may still hope that the greenback is overshooting, but past experience shows that overshooting can go a long way. And the dollar is still far from cheap. On a trade-weighted basis, it is above its average over the past 30 years. A continued slide should surprise no one.

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Reforming China's banks

Don't bank on a bail-out

Dec 4th 2003 | HONG KONG
From The Economist print edition

Chinese banks need more than simply another capital injection

FOR months rumours have been building that China is about to rescue its ailing banking sector once again. A decision to do so, it was whispered, was taken at October's Communist Party plenum. Late last month, vice-finance minister Lou Jiwei confirmed that one of the big four state-owned lenders—Industrial & Commercial Bank, Bank of China, China Construction Bank and Agricultural Bank—would soon be selected for a capital infusion. So hopes were high when the country's top banking supervisor, Liu Mingkang, called a press conference on December 1st.

It was a damp squib. Mr Liu said he planned to open China's banking sector to greater foreign competition: the maximum stake an international investor can take in a Chinese bank has been raised from 15% to 20% and capital requirements for foreign lenders wishing to open branches on the mainland will be reduced. But on the timing or size of the planned injections of fresh money there was not a word.

That China's banks need another bail-out is patently obvious. The big four, which make 61% of the country's loans and hold 67% of deposits, are technically insolvent. Their non-performing loans (NPLs) are estimated by the government itself to be 2.4 trillion yuan ($290 billion) or 23% of total loans. But everyone else, from credit-rating agencies to analysts at investment banks, think they are closer to 3.5 trillion yuan.

Not all of this is irretrievably lost. Nor do NPLs have to be cut to zero. Still, assuming a 25% recovery rate for bad debts, a target NPL ratio of 12% and a capital-adequacy ratio for banks of 3% (well below international standards), Jonathan Anderson, of UBS in Hong Kong, puts the net cost of bailing out the big four at around 2.2 trillion yuan, or one-fifth of China's GDP. Tackling the whole financial system, including joint-stock and city banks as well as rural credit co-operatives, would set the state back 4.3 trillion yuan.

Whether China can afford this is questionable. Government debt is around 45% of GDP. There are also unfunded welfare and pension liabilities of perhaps 70% of GDP. Richer countries face similar burdens, but also have a bigger tax base than China to take the strain. Add in the fact that Beijing is working from the low, official estimates of NPLs and, Mr Anderson estimates, the bail-out, when it arrives, will total only 800 billion-1 trillion yuan.

That, however, is only half the problem. Simply pouring more cash into the banks without reforming their operations will waste money and add to the system's moral hazard: bank bosses know their institutions are too big to fail. A 270 billion yuan capital injection in 1998 and the hiving-off of 1.4 trillion yuan of bad debts to four asset-management companies a year later did little to halt reckless lending.

Mr Liu, a respected former commercial banker, is well aware of this. As a result, he stresses that only those of his charges, which improve their corporate governance will be rewarded with a capital injection and a stockmarket listing. He is also keen to bring in foreign expertise; hence his moves on December 1st.

And yet he must also know that he faces a Herculean task. The big four lenders are huge, with 1.4m employees and 116,000 branches, and in a terrible mess. For years they have been tools for government-directed lending to state-owned enterprises, which are more concerned with social and economic objectives than with profits. Despite modern computer systems, the banks have little expertise in assessing risk or pricing capital. Branches enjoy great autonomy and their managers are closer to local bosses or provincial governors than to head office.

China does have smaller, better-run banks, including Nanjing Commercial, which Mr Liu may allow to list next year, and Bank of Shanghai, in which HSBC, the International Finance Corporation (IFC), the private-sector arm of the World Bank, and a Chinese partner have an 18% stake. Javed Hamid, the IFC's Asian chief, says that these city banks may serve as a model for proper reform. But they are a small part of the financial system.

Meanwhile, the big four carry on blithely making loans to “bubble” sectors such as the property, car and metals industries. Despite attempts by the central bank to slow credit expansion by raising reserve requirements, the big four lent 20% more in October than they had a year before, according to Goldman Sachs. While China still has to deal with its existing bad debts, the next wave is already being created.

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Japan's banks

About time

Dec 4th 2003 | TOKYO
From The Economist print edition

A nationalisation does not herald a harder government line

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ON NOVEMBER 29th, Ashikaga Bank, tenth largest of Japan's 115 regional banks, admitted that it was insolvent, with liabilities in excess of assets of ¥102.3 billion ($930m) at the end of September. The government promptly nationalised the bank, acquiring all of its shares for nothing but promising to honour its other obligations. Ashikaga's managers stepped down. Reports suggest that the bank could receive some ¥1 trillion of public funds, equivalent to one-fifth of its assets.

The Financial Services Authority (FSA), the bank regulator, could face questions about its scrutiny of the bank. Riddled with bad loans, Ashikaga had been on life support for years, losing more than ¥400 billion since 1996, despite receiving a total of ¥135 billion of public funds in 1998 and 1999. Last year it raised another ¥30 billion, largely from local governments, borrowers and depositors, who have now lost their money. Soon afterwards, the bank was unable to pay dividends on preferred stock held by the government.

An FSA inspection, conveniently completed after last month's general election, found that Ashikaga was insolvent at the end of March. The bank had claimed to have enough capital to satisfy regulators but had in reality set aside ¥95 billion too little for bad loans. Its figures were also flattered by heavy use of deferred tax assets, which loss-making banks can set against tax bills if they become profitable within five years. These amounted to 186% of Ashikaga's tier-one capital.

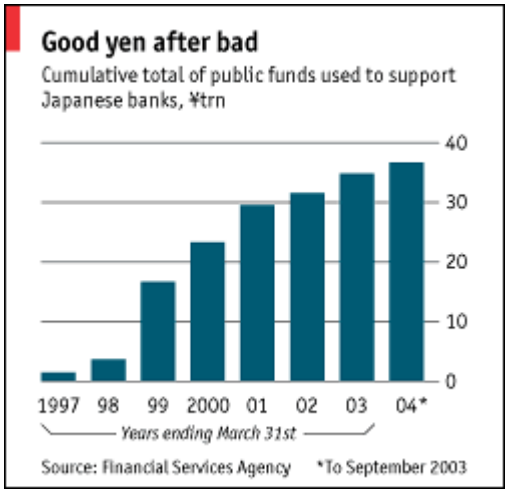
Arguably, Ashikaga was unlucky to be singled out. Politicians in the ruling Liberal Democratic Party wanted it bailed out with public funds, as Resona, the country's fifth-biggest bank, was in May. The FSA says that Ashikaga's insolvency sealed its fate. Yet Resona made a whopping loss in the six months to September 30th, despite the state's largesse. Maybe it too was insolvent before the bail-out, says Jason Rogers of Barclays Capital in Tokyo. Perhaps Ashikaga was not big enough to save.

Moreover, says Brian Waterhouse, a banking consultant, at least another ten regional banks would have similar problems if the FSA applied to them the same rigid definitions of capital and classification of non-performing loans as it has to Ashikaga. The FSA claims that the bank's home, Tochigi prefecture, just north of Tokyo, is “starkly different” from other local economies. In fact, it is no weaker than many other regions.

That said, Ashikaga's importance in Tochigi—it accounts for almost half the prefecture's lending and deposits—saved it from an even worse fate: being wound up. Savers will keep their money. Borrowers will find it easier to preserve credit lines than if the bank had gone under. Lesser banks might not fare so well. They are ineligible for nationalisation under current laws and would have to be closed down.

A few closures would be a big step towards reform of an overcrowded industry, yet the government seems reluctant to take it. The FSA is drawing up a new bill, due to be enacted next year, to make it easier to inject “preventative” public funds into wobbly banks. This would make Resona-type bail-outs easier and circumvent the need for Ashikaga-type nationalisations or for outright closures. The draft proposals would not oblige managers

to step down. Since 1996, the government has poured almost ¥37 trillion of public money into Japan's banks (see chart). Despite last weekend's nationalisation, it seems willing to pour in even more.



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Misbehaviour in Sweden

Skandal

Dec 4th 2003
From The Economist print edition

An insurer's blighted reputation

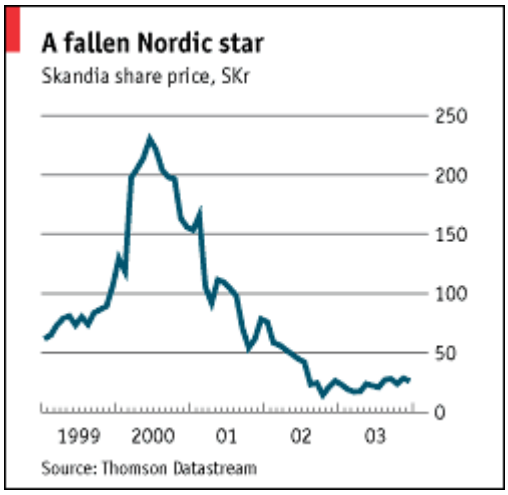
SWEDEN is in the throes of one of its biggest corporate scandals. In the spring, allegations surfaced of misbehaviour by top managers at Skandia, the country's biggest insurer. On December 1st a report by independent investigators laid bare its extent. The company's chairman, Bengt Braun, resigned. Though not accused of doing wrong, Mr Braun had been on the board when the miscreants enriched themselves at shareholders' expense.

By the solid standards of corporate Sweden, the findings of the 156-page report by Otto Rydbeck, a lawyer, and Goran Tidstrom, an accountant, are outrageous. Executives told shareholders that they got SKr356m ($37m) in bonus payments between 2000 and 2002, but in fact pocketed a further SKr550m. In 1997 and 1998 Skandia had launched two bonus programmes, both with ceilings authorised by the board of directors, explains Mr Rydbeck, but former chief executive Lars-Eric Petersson single-handedly did away with the cap on the second scheme in October 2000. “Mr Petersson should be personally liable for the SKr550m,” says Mr Rydbeck.

Stockholm's public prosecutor is launching a criminal investigation into this payment and another transaction from which Mr Petersson and his deputy, Ulf Spang, received SKr70m more than authorised. Mr Petersson, Mr Spang and Ola Ramstedt, the head of Skandia's life-insurance business, took corporate flats for themselves and their relatives. The flats were renovated at company expense.

The scandal is doing the wheezing insurer's financial health no good at all. Skandia's share price is one-tenth of its peak in June 2000 (see chart). Although Skandia reported a pre-tax profit of SKr171m for the third quarter on November 24th, compared with a loss of SKr19m a year earlier, Standard & Poor's, a credit-rating agency, downgraded its outlook to negative from stable. The company looks vulnerable to takeover. On December 2nd Sampo, a Finnish bancassurer and Skandia's biggest shareholder, denied that it was planning a bid.

Once Skandia was a favourite of growth investors, having transformed itself from a staid property-and-casualty insurer into an innovative provider of unit-linked life-insurance policies. A speciality was insurance policies wrapped around other companies' mutual funds. In the 1990s it took on the American market, even becoming America's fastest-growing provider of unit-linked policies. But the stockmarket crash exposed Skandia's vulnerability to the stockmarket. Its assets and investment portfolios shrank, and so did sales. It started making operating losses. In December 2002 Skandia was forced to sell American Skandia to Prudential Financial, an American insurer.



Even so, say analysts, Skandia's foundations are sound. The bad old bosses have gone and their successors are cleaning the place up. New rules on incentive programmes, company flats and the like were introduced in June. Now Skandia's recovery from its excesses can begin.

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American mutual funds

Better never than late

Dec 4th 2003
From The Economist print edition

The SEC proposes rules to curb mutual-fund abuses

A WEEK without another instalment in America's mutual-fund scandal? Now that would be news. As it happened, on December 2nd state and federal prosecutors filed civil charges for improper trading against Invesco Funds Group, a subsidiary of Amvescap, an investment firm with headquarters in London, and Raymond Cunningham, its chief executive. On the same day Richard Strong gave up his many functions at Strong Financial, which he founded. Mr Strong is under investigation by Eliot Spitzer, New York's attorney-general, for allowing illegal trading of shares in his mutual funds.

As the scandal spreads, America's Securities and Exchange Commission (SEC), mutual funds' main regulator, is trying to clean up the industry by devising new rules. Most of the agency's proposals, set out on December 3rd by William Donaldson, the SEC's chairman, are uncontroversial. An exception is a recommendation, approved unanimously by the agency's five commissioners, intended to combat late trading, the illegal practice of buying or selling shares in funds after the market closes at 4pm New York time. Some funds have permitted this, allowing privileged investors to trade on new information at old prices.

At present, buy-and-sell orders do not count as late if they are received by intermediate traders of mutual-fund shares, such as brokerages, insurers and administrators of retirement plans, before 4pm. The intermediaries are then allowed to place orders after this time. The SEC now wants orders to be in the hands of fund managers, not merely intermediaries, before the market closes—a so-called “hard cut-off”.

In this way the SEC wants to eliminate late trading by intermediaries. In its investigations in the past couple of months, the agency has found that more than 80% of fund managers let intermediaries send orders in after the stockmarket shuts. This allows the intermediaries to hide illegal, late trades amid legitimate transactions. Trust in intermediaries to pass on only those orders received before 4pm has been misplaced, said Paul Roye, head of the SEC's investment-management division.

Brokers, banks and pension-plan managers are up in arms about the hard cut-off. They argue that it will increase costs for small investors, because they will have to impose earlier deadlines on such clients if they are to get their orders to the mutual funds before 4pm. According to James Klein of the American Benefits Council, a lobby group, the new rule would mean that some members of retirement plans would not see their trades executed for a day or two.

The SEC's other recommendations have met scarcely any opposition at all. The agency is weighing new rules requiring mutual-fund firms to disclose their market-timing policies clearly in their marketing documents. Market timing, the rapid trading of mutual-fund shares in order to exploit movements in the prices of the underlying securities, is not illegal but breaks the rules of most mutual-fund companies. The agency is also considering requiring a higher redemption fee when investors sell their mutual-fund shares quickly, for instance within five days of purchase, to discourage market timing. Some funds already have such fees.

Moreover, the agency is pushing for improved disclosure by obliging funds to reveal their policies on the valuation of their investments. Funds tend to use the prices at the previous day's close. The SEC would prefer “fair-value” pricing, under which funds would continually re-price stocks according to what they believe them to be worth. Another proposed rule would insist that the chairmen of fund companies' boards be independent of the companies managing the funds and that three-quarters of board directors be independent. Now only half must be.

The SEC has taken one firm decision: from now on funds must have chief compliance officers, to monitor obedience to regulations, as well as compliance policies that must be reviewed annually. The other proposals will be discussed and amended during the next three months. Mercer Bullard, a former SEC official, believes the opposition of brokers and others will stop the hard cut-off rule from becoming law. In today's climate, that looks unlikely.

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Accounting

How bad was Andersen?

Dec 4th 2003 | NEW YORK
From The Economist print edition

An audit of leading auditors suggests that Arthur Andersen was not unique

WHEN Arthur Andersen, the world's fifth-biggest accounting firm, received a terminal sentence from a Texas court in June 2002, one unresolved question was why the capital markets had not already done the job. Andersen was convicted for destroying documents concerning Enron, its disgraced client. But its prosecution had been prompted by its inept auditing of Enron and by past failures at such companies as Waste Management and Sunbeam. As a Texas judge, Melinda Harmon, remarked in a related case, Andersen had shown a "callous, reckless disregard for its duty to investors and the public trust for decades."

Why then had investors not shunned the bonds and shares of Andersen's clients? An auditor's job, after all, is to confirm to shareholders that companies' financial reports are correct. An auditor's endorsement should be only as good as its reputation. So a sullied auditor should at the very least be at a competitive disadvantage. Yet only when Andersen was clearly heading for oblivion did the financial markets began to penalise its clients. Even then, the reason was more likely to be the expectation of lawsuits and the high cost of switching auditors than suspicions over the quality of accounts.

A new study* by Theodore Eisenberg and Jonathan Macey, two law professors at Cornell University, supplies a possible answer. It looks at "restatements"—corrections to accounts—by the largest audit clients of the top accounting firms. Restatements can occur for many reasons, such as changes in rules, but the authors consider only those caused by errors. Andersen may have remained competitive because its record was no worse than the others'.

The study tracked American companies with sales of at least $1 billion in 2001 over the five years beginning in 1997. Statistically, there was no significant difference among the firms. That said, Andersen had the second-lowest rate of restatements for revenue recognition, the kind of correction that has the greatest impact on share prices. Only 2.8% of its clients restated, compared with 5.6% for Deloitte & Touche.

For all five firms covered, the frequency of restatements rose steadily between the first year of the study and the last. By 2001, almost 4% of Andersen's clients had to restate revenue, as did almost 5% of those of Deloitte and PricewaterhouseCoopers. In 2002, note the authors, a review of Andersen by Deloitte concluded that Andersen complied with professional standards. At the time, many commentators saw this as the industry protecting itself. A more damning conclusion might have been that the review was spot on.

Worse, the study finds that, as big companies grow, they are more likely to restate their accounts. This suggests that the complexity and cost of an audit increase with size. This is hardly a surprise, but it can have a pernicious effect: auditors become more and more reliant on big customers. This, in turn, risked undermining the idea that an auditor should value accounting principles and its reputation above the loss of a client. For only one firm was there no link between client size and the frequency of restatements: Andersen.

From all this, it is hard to see what auditors achieve, besides allowing clients to comply with the Securities and Exchange Commission's rules on financial statements. All seem to have been equally good or bad. In surveys, audit-committee chairmen say that the choice of auditor depends heavily on reputation. Messrs Eisenberg and Macey conclude that most often the decisive factor is price. Maybe you get what you pay for.

* “Was Arthur Andersen Different? An Empirical Examination of Major Accounting Firms' Audits of Large Clients.” Forthcoming in the *Journal of Empirical Legal Studies*

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Catastrophe bonds

Risky business

Dec 4th 2003
From The Economist print edition

Can the capital markets solve the problem of terrorism insurance?

GOOAAAL! On December 5th Michael Schumacher, six times champion of Formula One motor racing, and other glitterati are due to make the draw for qualifying tournaments for the 2006 World Cup in Germany. That the show goes on is thanks, in large part, to a group of bankers led by Credit Suisse First Boston, a Swiss investment bank, which helped FIFA, the world football federation, insure the world's most popular sporting event against terrorism and other risks.

Such coverage has been hard and expensive to come by since September 11th 2001. AXA, a French insurer, backed out of insuring the 2002 tournament in Asia after that day's attacks. So this time FIFA turned to the capital markets: in September it issued $260m of “cancellation bonds”, the first transfer of terrorist risk to public investors. These will receive a handsome yield in return for underwriting the risk of cancellation. If the tournament is called off, they will lose three-quarters of their principal.

The offering is the latest twist on catastrophe bonds (“cat bonds”), through which investors have in the past assumed the financial risk of big natural disasters. Since cat bonds were first issued in 1997, after Hurricane Andrew in Florida and a huge earthquake in San Francisco caused reinsurance premiums to rocket, over $6.3 billion has been issued, according to Swiss Re, a reinsurer. So far this year, $900m of catastrophe risk has been transferred in this way.

But the explosion in the issuance of cat bonds expected by some has failed to materialise. On the plus side, investors have bought them because Treasury and corporate bond yields are skimpy and because natural disasters are uncorrelated with market swings. Helpfully, there have been few payouts. The bonds' defenders also say they offer secure coverage for many years, as opposed to annual negotiations with flighty insurers. However, the bonds are time-consuming to structure and are usually pricier than reinsurance.

Is the FIFA bond the new face of terrorism insurance? Probably not. FIFA's issue worked because football matches can be relocated and rescheduled relatively easily, making the risk of cancellation low: the World Cup will take place in 12 different stadiums in Germany. And like the bondholders, FIFA, which receives over 90% of its revenues from the tournament, has an enormous interest in the tournament's going ahead. This makes the insuring of the World Cup different from insuring against terrorism-related property damage. Cat bonds may be the way ahead, though, for other big-ticket events.

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Economics focus

Competition is all

Dec 4th 2003
From The Economist print edition

There is more to making markets work than laisser faire

QUESTIONS surrounding competition policy tend to divide economists—and not necessarily along party lines, so to speak. Mainstream pro-market economists agree almost to a man that competition is an indispensable spur to efficiency and innovation, and hence to higher living standards and faster economic growth. There is far less agreement over the character and extent of the government intervention that is required to make sure competition thrives. Recall, for instance, how the Microsoft anti-trust case divided the economics profession between those who thought that vigorous enforcement action was called for and those who felt that Microsoft's dominance of its markets could and should be left to correct itself.

In the annual public lecture of Britain's Royal Economic Society, John Vickers, a distinguished scholar and chairman of Britain's Office of Fair Trading (OFT), points out that this tension in economics goes back a long way*. Just compare, he says, two of the best-known quotations from Adam Smith:

> It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their own interest.
>
> People of the same trade seldom meet together, even for merriment or diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.

The point of the first quotation is to say that self-interest, unco-ordinated except by the invisible hand (that is, by competition), promotes the public good. The second says, in contrast, that producers set out to subvert competition unless they are somehow prevented from doing so. So the first remark is broadly sympathetic to the principle of laisser faire, whereas the second apparently takes an opposite view. But Mr Vickers explains that Smith's comments must be seen as complementary rather than contradictory. Questions about the desirability of competition, especially those bearing on how best to arrange incentives so that welfare is improved, must be kept separate from questions about the inevitability of competition. “There is no inconsistency in regarding competition as beneficial but vulnerable to being undermined—for example, by cartel activity.”

Mr Vickers argues that the right way to think about competition policy is to see it as a form of regulation expressly intended to bring out the best of laisser faire. To the extent that competition policy succeeds, other forms of economic regulation will then become less necessary. Thus, judicious use of one kind of economic regulation—competition policy—can hope to lower the aggregate burden of all kinds taken together.

Seen this way, competition policy extends far beyond antitrust as traditionally defined. Notably, Mr Vickers regards reform of Europe's common agricultural policy as a species of (long-awaited) competition policy. Cartel-busting, though, remains a central concern. And in this area Mr Vickers reports that efforts in Europe have been stepped up. Britain, in particular, he says, has learned from America's experience. America relies heavily on combining leniency for those who first come forward with information and severity against hard-core offenders. Promising partial or total immunity to whistle-blowers transforms the incentives facing cartel members, making their conspiracies against the public far less stable, even before the trust-busters turn their gaze upon them. The British authorities have adopted this strategic use of leniency.

Mr Vickers also argues that broad-based deregulation should often be regarded as a primary tool of competition policy—not a view that the OFT or similar agencies have always eagerly espoused. Much of

the public may be sceptical too, often regarding efforts to replace direct control with competition as a cause of subsequent grief. Excellent reading on this is a new paper by Alfred Kahn, doyen of America's regulation economists†. In a study jointly published by the American Enterprise Institute and the Brookings Institution, Mr Kahn assaults the widely held view that America's deregulation of airlines and telecoms has been a terrible failure—and the main cause of the financial disasters lately visited upon those industries.

Cartels and corporate supergrasses

Not so, as Mr Kahn's methodical analysis makes plain. Deregulation of the airline industry has been, he says, “a nearly unqualified success, despite the industry's unusual vulnerability to recessions, acts of terrorism and war.” The benefits to consumers have been estimated at in excess of $20 billion a year, mainly in the form of lower fares and huge increases in the availability of fast one-stop services between hundreds of cities. Consumers do complain that standards of service have fallen. So they have—because passengers are unwilling to pay for them. Through competition, the market has discovered that consumers prefer cheap tickets to frills. Such discoveries are the whole point.

American telecoms deregulation is a more complicated tale, but here, too, Mr Kahn draws attention to several large and clear benefits: much cheaper rates for long-distance calling; vastly cheaper cellular and other wireless services; and, in both cases, correspondingly huge increases in usage.

Reluctant as consumers may be to believe it, competition is far and away their best friend in economic policy. The first question to ask of any existing microeconomic policy, or of any proposed new one, is simply whether it promotes competition. Depressingly often, despite the efforts of policy-oriented economists such as Mr Vickers and Mr Kahn, the answer is still no.

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* “Competition Economics”. The speech can be downloaded from www.oft.gov.uk/News/Speeches+and+articles/2003/index

†“Lessons from Deregulation: Telecommunications and Airlines After the Crunch”. Published by the AEI-Brookings Joint Centre for Regulatory Research. The paper can be downloaded from

www.aei-brookings.org/publications/abstract.php?pid=400

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Lightning

Sturm und Drang

Dec 4th 2003 | BERLIN
From The Economist print edition

Science Photo Library

How lightning works is still a mystery. But it seems to have big effects

IT LOOKS like a construction trailer sitting outside an underground car park at the rear entrance of the Institute for Experimental Physics of the Free University of Berlin. But late at night the door to the car park opens and a laser beam shoots out of the side of the trailer, scorching the cement wall at the far end, 100 metres away.

The researchers at Ludger Wöste's laboratory who control this device are not, despite appearances, rehearsing for the next James Bond movie. Rather, Teramobile, as their laser is called, is designed to probe the nature of lightning. Dr Wöste and his team hope to be able to make lightning artificially, using what they say is the world's first mobile femtosecond laser (so-called because the pulses of light it emits last only a millionth of a billionth of a second, an eyeblink known to physicists as a femtosecond). Remarkably, more than 200 years after Benjamin Franklin showed that lightning is a form of electricity by flying a kite in a storm, the phenomenon is still not properly understood. But no one doubts its importance. Lightning has a significant role in controlling the chemistry of the atmosphere. And knowing more about it might let meteorologists issue better storm warnings.

Much of the ignorance about lightning is because the natural stuff is unpredictable and complicated. Currently, researchers must either literally wait around for lightning to strike, or else they can try to trigger it with rockets that work by trailing copper wires from the sky, thus “earthing” the clouds they are fired into. Using a laser would be easier. When a laser beam cuts through the air, the intense electric and magnetic fields of which its light is composed tear the atoms and molecules of air apart, creating what is called an “ionisation channel”. Because this channel is an electrical conductor, it provides a place for surrounding electrons to go. If there are enough free electrons around (and a thundercloud is full of them) lightning will be formed. At least, that is the theory. So far, Dr Wöste and his colleagues have succeeded only in generating lightning in the laboratory—or, at least, in the car park. However, they are confident that the principle will work outdoors as well.

Bolts from the blue

So much for unpredictability. That lightning is complicated as well, is because the electric and magnetic fields involved in it interact in poorly understood ways, high up in the atmosphere and on timescales too short to be observed with existing outdoor instruments. Originally, lightning was thought to consist simply of giant sparks. A spark happens when an electric field pulls the electrons and atomic nuclei of a gas (which have opposite electrical charges) in opposite directions. When the field is strong enough to overcome the attraction between electrons and their nuclei, there is a sudden electrical discharge. The problem is that, despite years of effort, researchers have never observed an electric field in a thunderstorm that is powerful enough to do this. In fact, the observed fields have been about a tenth of those required by simple spark theory.

On top of this, spark theory suggests that lightning should generate X-rays. Unfortunately, no one can find them. An observation made earlier this year by Joseph Dwyer of the Florida Institute of Technology and his colleagues, may, however, have solved the mystery. Dr Dwyer succeeded in observing X-rays that were generated by lightning in a thunderstorm in Florida. But they were not the sort of X-rays that standard spark theory predicts. Instead, they support what was once a maverick theory of lightning, pioneered by Alexander Gurevich of the Lebedev Institute in Moscow in the early 1990s. According to Dr Gurevich's theory, known as “runaway breakdown”, lightning is actually triggered by cosmic rays—energetic, electrically charged particles that come from the depths of space.

A runaway breakdown happens when a cosmic ray accelerates one, or a handful, of electrons to very high energies, and these electrons in turn cause a chain reaction in the air by knocking more and more electrons away from their parent nuclei. An initial electric field has to be present for the chain reaction to occur but, conveniently, this field needs to be only a tenth of that required by conventional theories, and is thus precisely in line with observations. So it looks as though lightning, even though it is no longer thought of as a manifestation of the wrath of the gods, does indeed have an extraterrestrial origin.

Weather, or not

The growing interest in lightning stems not only from curiosity about the phenomenon itself, but also from the notion that it may affect both the weather and the long-term climate more than had been realised. To this end, Hugh Christian and his group at the Marshall Spaceflight Centre in Huntsville, Alabama, a laboratory run by America's National Aeronautics and Space Administration, are studying how lightning appears in the storms that cause tornadoes.

Lightning is not the cause of tornado formation, but it does allow Dr Christian to peek into the heart of a storm. Although radar can track the way winds flow within a storm, it cannot easily discern the total energy of a storm, and whether that energy is increasing or decreasing. This is important, because an increase in energy means that a storm is more likely to form a tornado. However, Dr Christian and his team see a sudden jump in the number of lightning flashes within a storm about 20 minutes before tornadoes hit the ground. When it comes to tornadoes, even this brief warning is valuable. And according to Dr Christian, his lightning-based technique also gives a much lower number of false positives than radar observations, which means it is less likely to cry “wolf” by mistake.

Nor are tornadoes the only thing that lightning can predict. Another group of researchers, based at Paul Sabatier University in Toulouse, France, is using lightning data to try to forecast the occurrence of hailstorms. And the importance of lightning is not confined to predicting the behaviour of storms. It also affects the composition of the air. Earlier this year, Renyi Zhang of Texas A&M University and his colleagues published a paper in the *Proceedings of the National Academy of Sciences* arguing that lightning is the most important source of ozone in the upper atmosphere.

Because this ozone absorbs ultraviolet radiation from the Sun, and thus makes the Earth a healthier place for living creatures, understanding where it comes from is important. Furthermore, Dr Zhang said in his paper that lightning is also responsible for most of the nitrogen oxides present in the upper atmosphere. These are greenhouse gases (ie, they help to retain heat in the atmosphere), and thus have an important role in regulating the climate. In the same vein, Colin Price and Mustafa Asfur, of Tel Aviv University, recently presented a paper to a conference of lightning scientists held in Versailles, near Paris. They observed that lightning activity is closely correlated with the presence of water vapour in the part of the atmosphere known as the upper troposphere. Water vapour is the most important greenhouse gas in the atmosphere, and the upper troposphere marks the boundary of the part of the atmosphere where most weather is generated, so this may be an important finding—though whether the water vapour is actually causing the lightning is not clear.

This is all a long way from old Ben Franklin, that arch-rationalist, and his kite. But it seems that lightning, the epitome of frightening and untameable natural phenomena, still has a few secrets hidden from rational modern man.

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About sponsorship

Antimatter and cancer

Beam me up

Dec 4th 2003 | GENEVA
From The Economist print edition

It may be possible to destroy tumours using beams of antimatter

ANTIMATTER is the very stuff of science-fiction: witness the matter-antimatter drives that power the starship *Enterprise*. Yet for all its weirdness, antimatter is real not fictional, and has already proved useful in medicine. The positrons employed in positron-emission tomography (PET), a scanning technique used, among other things, for detecting cancer, are the antimatter equivalent of electrons. Researchers working at CERN, a large particle-physics laboratory near Geneva, now have bigger ideas. They have found that another type of antimatter, the antiproton, has potential not merely for detecting cancer, but for treating it.

The positrons used in PET are produced by the decay of radioactive chemicals that are injected into a patient and accumulate preferentially in cancer cells. Tumours thus appear bright in PET scans. Antiprotons, though, are altogether more challenging to create than positrons. Instead of relying on radioactive decay, antiproton manufacturers have to smash ordinary protons into targets made of metals such as tungsten. In some cases, the energy released by a collision appears as matter, in the form of a further proton and an accompanying antiproton ($E=mc^2$ and all that). The antiprotons thus produced then have to be extracted into another accelerator, so that they can be kept whizzing around in a vacuum without bumping into anything. If they did bump into something made of normal matter, they would react with the ordinary protons in it and be annihilated.

One place where it is possible to manufacture antiprotons routinely in this way is CERN. And a multidisciplinary research collaboration involving several universities and a small Californian firm called PBar Labs has been working there to study how beams of antiprotons behave when fired into living cells. (“PBar” refers to the symbol used to represent an antiproton, a “p” with a short dash above it.)

As they expected, the researchers found that the antiprotons knock electrons off atoms in the cells—a process known as ionisation. That, in turn, rips the molecules containing those atoms apart, often killing the cell they are in. Of course, the process destroys all types of cell, not just tumorous ones. However, most of the ionisation occurs just before an antiproton comes to a full stop, so if the energy of the antiproton beam is chosen carefully, it can burn a minute hole at a specific point well below the skin. That means it can be aimed precisely at a tumour.

So far, nothing about this process differs significantly from what a beam of ordinary protons might do. And given that antiprotons are so much harder to generate and store than the ordinary sort (which can be produced simply by ionising hydrogen), it might seem perverse to use an antiproton beam. There is a difference, however, and that is what happens when an antiproton eventually comes to a stop. Then, it will drift around until it collides with an ordinary proton. After that, all hell breaks loose. The mutual annihilation of antiproton and proton releases a huge amount of energy (at least, it is huge in the context of a single cell). That does a lot of damage, and is thus far more effective at killing cells than mere ionisation.

Experiments recently completed by the team at CERN confirm this picture. The researchers are, however, at pains to emphasise that these are early days. Michael Holzscheiter and Carl Maggiore, of PBar Labs, note that they will have to repeat those experiments, to show that the first results were not a fluke. They will also need to perform detailed comparisons with similar experiments carried out using beams of ordinary protons, in order to confirm that antiprotons do, indeed, produce more damage than the ordinary sort.

Even if the effect is established beyond doubt, there is the thorny question of whether antiproton beams can ever be made affordable enough for them to be a viable option for treating cancer. CERN is one of

only a handful of sites in the world where such beams can be made at the moment. Dr Holzscheiter and Dr Maggiore therefore reckon that routine clinical applications are at least 10 years away. Nevertheless, they hope that antiprotons may eventually be as useful as positrons in the medical arena.

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Climate change

Is Kyoto dead?

Dec 4th 2003
From The Economist print edition

The United Nations treaty on climate change is in less trouble than it looks

AFP

"THIS protocol can't be ratified." So declared Andrei Illarionov, a senior adviser to Vladimir Putin, Russia's president, on December 2nd. The protocol in question is the Kyoto protocol, a United Nations treaty intended to curb climate change, and Mr Illarionov's comment coincided with the beginning of a conference taking place in Milan that is devoted to the subject. It set off a panic among Kyoto's supporters. The following day Mukhamed Tsikhanov, the deputy economy minister responsible for Kyoto, seemed to flatly contradict Mr Illarionov. "There are no decisions about ratification apart from the fact that we are moving towards ratification." This did not bring much clarity to the situation, but it did calm the fears of those supporting the treaty.

What Russia eventually decides to do will determine Kyoto's fate. Ever since George Bush yanked the United States out of the agreement, in early 2001, it has looked shaky. Its arcane rules require 55 countries (who must represent at least 55% of the industrial world's greenhouse-gas emissions in 1990) to ratify the pact before it comes into force. With the United States and some smaller countries out already, the decisive vote lays with Russia.

So what is Russia up to? One explanation might be that Russia's policymakers are at daggers drawn about the issue. Neither Mr Illarionov, who has often criticised the treaty for placing onerous burdens on Russia, nor Mr Tsikhanov have the last word. Only the Duma, Russia's parliament, can reject the treaty with authority, and only the two men's boss, President Vladimir Putin, can decide when and whether to submit it to the Duma for approval in the first place. Mr Putin said as recently as September that Russia is "preparing for ratification".

A more likely explanation is that Russia is trying to blackmail the European Union. Just why and how is a little complicated. Mr Illarionov's claim that Kyoto will keep Russians mired in poverty, by restricting their economic development, is unfounded. The truth is that it will not make the Russians as rich as they once hoped.

Kyoto actually allocates Russia extremely generous allowances for the emission of carbon dioxide, a so-called greenhouse gas that is implicated in climate change because it causes heat to be retained in the atmosphere. That was done as a bribe during the original negotiations. The allowances were based on Soviet-era emissions levels, but the economic collapse that followed the demise of the USSR eliminated a lot of polluting industry, and meant that Russia would automatically exceed its targets. It could then sell the excess as "emission credits" to people who found it cheaper and more convenient to pay for someone else to do the cutting, than to do it themselves.

For "people" read "Americans". With the departure of the United States from the treaty, however, the price of emission credits has collapsed. So now Russia wants the EU and Japan to cough up in some form, as Mr Tsikhanov frankly admitted. The EU, in particular, is desperate for the treaty to come into force.

Mr Putin may yet kill the treaty. However, this week's hysteria notwithstanding, a final decision is unlikely to come before Moscow's presidential elections next March. After all, brinkmanship is a time-honoured Russian game, and waiting only strengthens Russia's ability to extract concessions. Rumours of Kyoto's

demise appear to be exaggerated.

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Correction: Jim Kim

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An editing error in last week's story on AIDS ("A mixed prognosis", Nov 29th), may have left readers wondering about the identity of "Dr Kim". He is Jim Kim, one of the architects of "3 by 5", a strategy just launched by the World Health Organisation to put 3m HIV-infected people in poor countries on anti-retroviral treatment by 2005. Apologies for the omission.

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Books of the year 2003

Home entertainment

Dec 4th 2003
From The Economist print edition

We choose the year's best books, and tell you about those our own writers published in 2003

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BIOGRAPHY

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Franklin Delano Roosevelt: Champion of Freedom. By Conrad Black. *PublicAffairs; 1,280 pages; $39.95. Weidenfeld & Nicolson; £30*

Lord Black shows how America's cunning and ruthless wartime president overcame the legacy of polio and a spoiled upbringing to become the pivotal figure of the 20th century. A fine achievement for any historian, let alone one who has other calls on his time.

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Khrushchev: The Man and His Era. By William Taubman. *Norton; 876 pages; $35. The Free Press; £25*

A masterly biography, by an American academic, that looks at how Nikita Khrushchev—the most impulsive and mercurial of Soviet leaders—publicly condemned the oppressive, inflexible and fearful state that Stalin created, yet never succeeded in breaking free from it.

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Goya. By Robert Hughes. *Knopf; 429 pages; $40. The Harvill Press; £20*

Goya's genius, laid bare in this long-awaited work by *Time* magazine's distinguished former art critic, Robert Hughes, lay in his image-making power, his ability to focus the emotion in a scene and to reinforce it with detail.

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Beautiful Shadow: A Life of Patricia Highsmith. By Andrew Wilson. *Bloomsbury; 544 pages; $32.50 and £25*

Murder, Patricia Highsmith once observed, “is a kind of making love, a kind of possessing”. If you want to know what goes on in the thoughts of a writer of fiction, this is the book to read.

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W.B.Yeats: A Life (Volume II, The Arch-Poet). By R.F. Foster. *Oxford University Press; 798 pages; $45 and £30*

Learned, scholarly and astonishingly detailed, Roy Foster's two-volume biography (of which this is the concluding part) is a model of the serious literary life.

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Governor Reagan: His Rise to Power. By Lou Cannon. *PublicAffairs; 512 pages; $30*

Lou Cannon is Ronald Reagan's finest biographer. To read this book, a precursor to Mr Cannon's 1991 work, “President Reagan: The Role of a Lifetime”, is to see myths dissolved and reality reconstructed in all its complexity.

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The Majesty of the Law: Reflections of a Supreme Court Justice. By Sandra Day O'Connor. *Random House; 352 pages; $25.95*

Sandra Day O'Connor, the first woman to sit on America's Supreme Court, is often regarded as an earnest but plodding mediocrity. All the more surprising, then, that her new book is remarkably good—a clear-eyed, well-written civics lesson that knits together personal reminiscences, brief historical essays and some useful suggestions for potential reforms.

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HISTORY

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Reformation: Europe's House Divided 1490-1700. By Diarmaid MacCulloch. *Penguin/Allen Lane; 864 pages; £25. To be published in America as “The Reformation: A History” by Viking Press in April 2004*

As unjudgmental as he is knowledgeable, Diarmaid MacCulloch, a professor of the history of the church, traces the fierce, 200-year contest to establish a true church beyond European Christendom, stretching as far afield as Warsaw and Virginia. Handled here with brilliance, this is the kind of history that normally gives even academic historians vertigo.

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God's Secretaries: The Making of the King James Bible. By Adam Nicolson. *HarperCollins; 304 pages; $24.95 and £18.99. Published in Britain as “Power and Glory: Jacobean England and the Making of the King James Bible”*

The boisterous, inspiring and fascinating tale of how 50 scholars, directed by King James I, “the wisest fool in Christendom”, transformed the old, old story into an English literary classic.

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Seven Myths of the Spanish Conquest. By Matthew Restall. *Oxford University Press; 240 pages; $28 and £20*

Rejecting the conventional hierarchy that placed “subhuman” Indians below “superhuman” Europeans, Matthew Restall's re-examination of the Spanish conquest portrays a far more complex process in which Indians were central participants on both sides of the struggle.

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They Marched into Sunlight: War and Peace, Vietnam and America, October 1967. By David Maraniss. *Simon & Schuster; 572 pages; $29.95*

Rather than choosing a single battle, David Maraniss shows how the actions of the American and North Vietnamese military and the American protesters back home unfolded over a few days at the end of October 1967. Like Michael Herr's “Dispatches” and Neil Sheehan's “A Bright Shining Lie”, this book deserves to become a classic on the Vietnam war.

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The Billy Ruffian: The Bellerophon and the Downfall of Napoleon—The Biography of a Ship of

the Line, 1782-1836. By David Cordingly. *Bloomsbury; 320 pages; $25.95 and £16.99*

Real devotees of Nelsonian literature, rather than mere Russell Crowe fans, reckon this biography of *HMS Bellerophon*—Billy Ruffian to her crew—the ship-of-the-line that took part in some of Nelson's bigger bloodbaths and began Napoleon's journey to Saint Helena, is the year's best addition to the genre.

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The Afrikaners: Biography of a People. By Hermann Giliomee. *University of Virginia Press; 560 pages; $39.50. C. Hurst & Co; £18.95*

Infuriated at their treatment by the British and frightened by the burgeoning African population, Afrikaners fell victim to a maniacal preoccupation with their own survival. That, more than anything, argues Hermann Giliomee, a distinguished South African historian and commentator, lay at the root of their devotion to apartheid.

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The Fall of Hong Kong: Britain, China and the Japanese Occupation. By Philip Snow. *Yale University Press; 384 pages; $35 and £25*

Britain may have had a second innings in Hong Kong after 1945, but, argues Philip Snow, the taste for colonial aloofness had passed and within a short time the British hardly mattered at all anymore.

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Castles of Steel: Britain, Germany, and the Winning of the Great War at Sea. By Robert K. Massie. *Random House; 865 pages; $35*

In his latest history of the first world war, the author of “Dreadnought” conveys the cold excitement of war at sea. His enthusiasm is infectious; his scholarship deeply impressive.

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Gulag: A History. By Anne Applebaum. *Doubleday; 736 pages; $35. Penguin/Allen Lane; £25*

Anne Applebaum, who covered eastern Europe for *The Economist* during the collapse of Soviet-run communism, has some distinguished predecessors in writing the history of the Gulag. Her work compares admirably with that of Robert Conquest and Aleksandr Solzhenitsyn, and sometimes supersedes it.

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All the Shah's Men: An American Coup and the Roots of Middle East Terror. By Stephen Kinzer. *John Wiley; 272 pages; $24.95 and £17.50*

Stephen Kinzer takes advantage of newly available material on the CIA to re-examine the 1953 coup that saw the democratically elected Iranian prime minister, Mohammad Mossadegh, replaced with American help by the shah. A passionate and persuasive warning about the unintended consequences of regime change.

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Venice: Fragile City 1797-1997. By Margaret Plant. *Yale University Press; 448 pages; $55 and £29.95*

By far the most comprehensive and lovingly researched recent history of Venice since Napoleon sacked the city.

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Black Earth: A Journey Through Russia After the Fall. By Andrew Meier. *W.W. Norton; 512 pages; $28.95. To be published in Britain by HarperCollins in February 2004*

There is depth to Andrew Meier's portrait of Russia, but breadth as well. The treasures lie in his love for the country and the nuances that emerge from his encounters with Russian soldiers, politicians, pensioners and public servants.

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POLITICS AND CURRENT AFFAIRS

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America Unbound: The Bush Revolution in Foreign Policy. By Ivo H. Daalder and James M. Lindsay. *Brookings Institution Press; 245 pages; $22.95*

President Bush is widely seen, abroad if not at home, as a bonehead. This view is rubbish, argue Ivo Daalder and James Lindsay, both scholars at American think-tanks. Mr Bush is his own man; he sees himself as the chief executive officer of a huge enterprise and acts accordingly; he has a world view and a clear idea of how America should fit into it; and he is no fool.

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Rogue Nation: American Unilateralism and the Failure of Good Intentions. By Clyde Prestowitz. *Basic Books; 336 pages; $26 and £16.99*

Clyde Prestowitz's book must be commended for the effort he has made to listen to those who are troubled by the political uses and limitations of American power, and also for the clarity with which he explains, particularly to American readers, how the United States and its foreign policy are all too often regarded by others.

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World on Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability. By Amy Chua. *Doubleday; 352 pages; $26. William Heinemann; £12.99*

Do not be misled by the over-excited title. This is a serious, sober and well-written analysis of the challenges to peace and prosperity posed by the phenomenon of economically dominant ethnic minorities. No anti-globalist tract, it nonetheless gives globalists plenty to think about.

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Random Family: Love, Drugs, Trouble, and Coming of Age in the Bronx. By Adrian Nicole LeBlanc. *Scribner; 416 pages; $25. Flamingo; £17.99*

Adrian LeBlanc spent ten years interviewing two Latina women from the Bronx as they made their way in and out of public housing, emergency rooms, prisons and courts; a startling portrait of how demanding it is to be poor.

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The Zanzibar Chest: A Story of Life, Love, and Death in Foreign Lands. By Aidan Hartley. *Grove/Atlantic; 432 pages; $24. HarperCollins; £20*

An African-born reporter with a lyrical gift muses on his homeland, his rage at its horrors and the fatal attraction of its wars.

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The Contradictions of American Capital Punishment. By Franklin E. Zimring. *Oxford University Press; 272 pages; $30 and £13.99*

Franklin Zimring, one of America's leading criminologists, rises above the cacophony of comment from politicians and campaigners with a thought-provoking and genuinely original book.

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The Dark Heart of Italy: Travels Through Space and Time Across Italy. By Tobias Jones. *Faber and Faber; 266 pages; £16.99. To be published in America North Point Press in June 2004*

Tobias Jones casts a chilling light on the government of Silvio Berlusconi, the corruption that continues to undermine the country and the *canzonissima* culture he so vividly personifies.

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ECONOMICS AND BUSINESS

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Pattern Recognition. By William Gibson. *Putnam; 368 pages; $25.95. Viking; £16.99*

Not, strictly speaking, a business book—but probably the best exploration yet of the function and power of product branding and advertising in the age of globalisation and the internet.

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The Recurrent Crisis in Corporate Governance. By Paul MacAvoy and Ira Millstein. *Palgrave Macmillan; 168 pages; £40. To be published in America by Palgrave in January*

A convincing explanation of why, despite all the recent reforms in American corporate governance, there will probably be more firms that go the way of Enron.

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Authentic Leadership: Rediscovering the Secrets to Creating Lasting Value. By Bill George. *Jossey-Bass; 240 pages; $27.95 and £18.50*

A book by one former chief executive being read by many current bosses as they try to survive the crisis of confidence in corporate America.

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Beyond the Core: Expand Your Market Without Abandoning Your Roots. By Chris Zook. *Harvard Business School Press; 256 pages; $29.95. To be published in Britain by HBS Press in January*

As companies slowly return to thinking about how to grow, rather than merely how to survive, this book is as good a practical guide to strategy as any.

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Corn and Capitalism: How a Botanical Bastard Grew to Global Dominance. By Arturo Warman. *University of North Carolina Press; 288 pages; $49.95 (hardback) and $24.95 (paperback)*

Arturo Warman, a former Mexican minister of agrarian reform, looks at how this staple, which cannot reseed itself, has become the social and economic backbone of many third-world countries.

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Moneyball: The Art of Winning an Unfair Game. By Michael Lewis. *W.W. Norton; 288 pages; $24.95*

A noted storyteller examines how the Oakland Athletics team achieved a spectacular winning record in 2002 while having the smallest player payroll of any major league baseball team.

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SCIENCE AND TECHNOLOGY

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Eating Apes. By Dale Peterson. *University of California Press; 333 pages; $24.95 and £17.95*

As logging continues and the trade in bushmeat becomes an ever bigger commercial enterprise in western and central Africa, our closest living relations—the last gorillas, chimpanzees and bonobos—are literally being gobbled up as we stand idly and watch.

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Einstein's Clocks and Poincaré's Maps: Empires of Time. By Peter Galison. *W.W. Norton; 256 pages; $23.95. Sceptre; £16.99*

Peter Galison, a historian of science, has culled new information from rarely seen photographs, forgotten patents and unexplored archives to tell the story of two scientists, one German-born and one French, engaged in the race toward a theory of time.

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The Music of the Primes: Searching to Solve the Greatest Mystery in Mathematics. By Marcus du Sautoy. *HarperCollins; 352 pages; $24.95. Fourth Estate; £18.99*

Marcus du Sautoy, a professor of mathematics at Oxford University, here provides the most detailed account of Riemann's hypothesis, the oldest, most subtle and most difficult of unsolved mathematical

problems.

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Nature via Nurture: Genes, Experience and What Makes Us Human. By Matt Ridley. *HarperCollins; 336 pages; $25.95. Fourth Estate; £18.99*

In his eminently readable new book, Matt Ridley, a former science editor of *The Economist*, travels to the frontiers of current research in a laudable attempt to resolve the continuing quarrel over genetics and environment.

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FICTIONS AND MEMOIRS

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The Great Fire. By Shirley Hazzard. *Farrar, Straus and Giroux; 288 pages; $24. Virago; £15.99*

A quiet and exquisitely crafted novel, opening in occupied Japan in 1947, in which a much decorated British major and a 17-year-old girl reclaim a simple individual happiness from the collective suffering that surrounds them. The most interesting work of fiction published this year.

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What I Loved. By Siri Hustvedt. *Henry Holt; 370 pages; $25. Sceptre; £14.99*

A clever novel, brimming with ideas about love and memory, perception and change, that tells a moving and, in the end, gripping story, “What I Loved” should finally win Siri Hustvedt the wider readership she deserves.

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The Curious Incident of the Dog in the Night-Time. By Mark Haddon. *Doubleday; 236 pages; $22.95. Jonathan Cape; £10.99*

Mark Haddon has created something completely new with this small-town crime story in which the murder victim is a poodle and the hero and narrator a 15-year-old boy with Asperger's syndrome.

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The Clearing. By Tim Gautreaux. *Knopf; 320 pages; $23. Hodder & Stoughton; £14.99*

Although mud and blood are the commonplace hues that pervade this tale of violence and infidelity set in a logging camp in 19th-century Louisiana, the result is surprisingly sensitive and controlled.

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Star of the Sea. By Joseph O'Connor. Harcourt; 416 pages; $25. Secker & Warburg; £12.99

A new treat for any reader who enjoyed Matthew Kneale's “English Passengers”, winner of the 2000 Whitbread prize.

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Persepolis: The Story of a Childhood. By Marjane Satrapi. *Pantheon; 160 pages; $17.95. Jonathan Cape; £12.99*

Set in Iran during the Islamic revolution, this cartoon memoir, in the tradition of Art Spiegelman's classic “Maus”, follows the growth of the six-year-old daughter of two committed and well-to-do Marxists as the family learns to cope with a fundamentalist regime that gets increasingly rigid as it gains more power. An illuminating record.

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Giving Up the Ghost: A Memoir. By Hilary Mantel. *Henry Holt; 240 pages; $23. Fourth Estate; £16.99*

Memoirs of childhood are three a penny, memoirs of guilt-edged Catholic childhoods two a penny. Hilary Mantel's book, which is both of these, manages to catch the very essence of a small, sharp-eyed child and carries that persona through to her years of maturity.

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CULTURE AND DIGRESSIONS

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Mountains of the Mind: How Desolate and Forbidding Heights Were Transformed into Experiences of Indomitable Spirit. By Robert Macfarlane. *Pantheon Books; 320 pages; $24. Granta; £20*

Of all the books published to coincide with the 50th anniversary of conquering Mount Everest, Robert Macfarlane's evocation of how the perceptions of mountains have changed over the past three centuries stands out as by far one of the most interesting and intelligent.

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Pretty Girl in Crimson Rose (8): The Puzzling Memoir of a Man in Love with Words. By Sandy Balfour. *Penguin Putnam; 224 pages; $23.95. Atlantic Books; £12.99*

A delightful memoir of crossword solving and exile by one who rebelled.

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Eats, Shoots and Leaves: The Zero Tolerance Approach to Punctuation. By Lynne Truss. *Profile Books; 209 pages; £9.99*

The tale of the panda whose diet was mispunctuated, and other English (mis)adventures.

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The Photographs So Far (Volumes 1-4). By Jim Dine. *Steidl Verlag; 1,046 pages; $150*

Jim Dine may be nearly 70, but the former collage painter and pop artist remains a true original, as is clear from this *catalogue raisonné* of his arresting recent photographic work.

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Antarctica. By Pat and Rosemarie Keough. *Nahanni Productions; 336 pages; $3,000*

Photographs to swell the heart of any armchair traveller. Like a Patek Philippe, this is a book you don't own, but merely look after for the next generation—once, of course, you've repaid the loan you took out to buy it.

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Books by *Economist* staff in 2003

Write books

Dec 4th 2003
From The Economist print edition

What we do out of office hours

OUR policy, established a year or so ago, is not to review books by our staff or regular contributors, because of the difficulty in convincing readers that such reviews are independent. Some readers, however, have expressed interest in knowing about such books. Here, therefore, is a list of books published by staff at *The Economist* during 2003. A list of all books in print by staff at *The Economist* is available at www.economist.com/staffbooks.

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The Company of the Future: Meeting the Management Challenges of the Communications Revolution. By Frances Cairncross. *Profile Books; 240 pages; £9.99*

The internet is changing the shape and internal workings of companies, says our management editor. Getting business processes and management quality right matter more today than buying the right kit.

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20:21 Vision—Twentieth-Century Lessons for the Twenty-First Century. By Bill Emmott. *Farrar, Straus and Giroux; 373 pages; $25. Penguin/Allen Lane; £20*

In his new book, the editor-in-chief uses the past to assess the future in geopolitics, especially of American leadership relative to other great powers, and to explore the future challenges to capitalism.

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The Company: A Short History of a Revolutionary Idea. By John Micklethwait and Adrian Wooldridge. *Modern Library Chronicles; 227 pages; $19.95. Weidenfeld & Nicolson; £14.99*

How a Victorian innovation, the joint-stock company, became today's corporate giant, by our United States editor and our Washington correspondent.

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The Miraculous Fever-Tree: Malaria and the Quest for a Cure That Changed the World. By Fiammetta Rocco. *HarperCollins; 348 pages; $24.95 and £16.99*

How quinine, discovered nearly 400 years ago in the New World, cured malaria, at the time a disease of the Old World, and opened the door to western imperial adventure in Africa, Asia and beyond, by our literary editor.

———————————————————————

We Need to Talk About Kevin: A Novel. By Lionel Shriver. *Counterpoint Press; 416 pages; $25 and £18.99*

A Columbine-style school massacre, as explored by the mother of the murderer, Kevin, in a series of letters to her estranged husband after Kevin has been put in a prison for juvenile offenders, by our chief fiction reviewer.

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Softwar: An Intimate Portrait of Larry Ellison and Oracle. By Matthew Symonds. *Simon & Schuster; 528 pages; $28*

Having been given unusual access to Larry Ellison, the former technology, and now political editor, paints an intimate portrait of the co-founder of the world's most important business software company.

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The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine. By Tom Standage. *Penguin/Berkley; 288 pages; $14. Published in Britain as "The Mechanical Turk"; Penguin; £6.99*

The story of the Turk, a chess-playing clockwork figure, by the technology editor.

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Power to the People: How the Coming Energy Revolution Will Transform an Industry, Change Our Lives, and Maybe Even Save the Planet. By Vijay Vaitheeswaran. *Farrar, Straus and Giroux; 368 pages; $25*

Liberalised energy markets, an increasingly influential environmental movement and innovations in hydrogen fuel-cell technology will all change the energy game, says our energy and environment correspondent.

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The Perfect Prince: The Mystery of Perkin Warbeck and His Quest for the Throne of England. By Ann Wroe. *Random House; 610 pages; $35. Published in Britain as "Perkin: A Story of Deception"; Jonathan Cape; £20*

The story of the young man who convinced much of Europe in the 1490s that he was the younger of the (supposedly murdered) Princes in the Tower, set against the ideas and illusions of his time, by the special reports and obituaries editor.

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About sponsorship

Eugene Kleiner

Dec 4th 2003
From The Economist print edition

Eugene Kleiner, pioneer of venture capitalism, died on November 20th, aged 80

Magnum

HAD you visited the Valley of Heart's Delight, south of San Francisco, in the 1930s, you would have found a pretty place of plum and walnut orchards. Radio hams liked to go there, attracted by the clarity of signals near the ocean. Seventy years later, the valley contained 7,000-odd companies working in electronics, biotech and their offshoots, with 11 more springing up every week. Yet this most recent industrial revolution, like earlier ones, depended on the chance combination of three elements: the scientist with his invention, an entrepreneur to market it, and an investor willing to risk his money.

Eugene Kleiner was each of these, at different times. But he began with no thought of revolution. When he came to California in 1956, a nerdy young engineer in flannel suit and tie, his only desire was to make a perfect transistor. His job was at the Shockley Labs, where he and seven others were employed to turn William Shockley's Nobel-winning invention into what was to become an integrated circuit. The volatile and brilliant Shockley wanted to fit as many transistors as possible on a single wafer of germanium. Mr Kleiner and his colleagues preferred silicon, which could take heat better; they fell out with the boss, and went off on their own.

But what then? Starting up a company, and getting seed capital, were still rare activities in 1957. The “Traitorous Eight”, as Shockley called them, managed to scrape together $3,500 between them. But they needed a backer, and only Mr Kleiner had the slightest contact with anyone with serious money. He wrote a letter, now famous in Silicon Valley history, to his father's stockbroker in New York; the letter was passed to Arthur Rock, a budding venture capitalist; Mr Rock went out to California, approved of the project, and persuaded Sherman Fairchild, the inventor of the aerial camera, to make Mr Kleiner's little group a subsidiary of his company.

Somewhat to his surprise, Mr Kleiner was now an entrepreneur. Unlike Shockley, he was good at it. The new-fledged Fairchild Semiconductor dispensed with titles and went for informality, a style that was to typify the Silicon Valley revolution. The scientists had an equity stake of 10% and stock options, both extraordinary at the time. But the formula worked. Within six months, the subsidiary was making money; within ten years, it accounted for every penny of Fairchild's profits.

By 1972, Mr Kleiner had plenty of cash. He also wanted to become a venture capitalist himself. The breed was still rare, and even rarer in the guise Mr Kleiner had in mind: a “technologist” who was involved and got his hands dirty, as well as simply writing cheques. He was never interested in enterprises that did not relish this approach. But in partnership with Thomas Perkins, and later in the firm of Kleiner, Perkins, Caufield & Byers, he gave the starting push to more than 350 companies. Some were duds, of course, like the snowmobile company that ran into the drifts with the 1973 oil embargo; but they also included Compaq, Genentech and Amazon. By 1997, KPCB had backed firms with a combined stockmarket valuation of more than $100 billion.

A slice of luck

What exactly Mr Kleiner said in his letter to New York is lost to history. Later, however, when he had acquired the mantle of a father of venture capitalism, he laid out some basic rules for ideas-men begging for money. First, get the facts straight. Second, don't lie. Third, leave nothing out. Fourth, seize cash as

soon as it is offered. As he put it, in what became known as Kleiner's Law of Appetisers, “The time to eat the hors d'oeuvres is when they're being passed round.” (This was later adapted, by himself or others, to “When the hors d'oeuvres are passing, take two.”)

Also, since he knew the other side, he laid out rules for venture capitalists. They should look less at ideas, he said, than at the soundness and energy of the people peddling them. Great ideas could easily fall apart on paper or, worse still, in the marketplace. “Make sure”, he insisted, “that the dog wants to eat the dog food.” Metaphors of eating always loomed large in Mr Kleiner's laws. It was, after all, a four-hour breakfast with Mr Perkins at the Hyatt Rickey's in Palo Alto that had made him a venture capitalist in the first place.

Opportunism, with a slice of luck, always played a large part in his life. In 1938 he escaped Vienna, with his family, just before the Nazis arrived. At Brooklyn Polytechnic, walking home one night after the opera, his pretty companion said she wanted to be a social worker; Mr Kleiner immediately asked her if she would help him by becoming his wife. She agreed. It was sheer good fortune, he always thought, that brought both Mr Rock and Mr Perkins into his life, and the luck of the business cycle that put him in the thick of the wildest industrial growth in modern American history. “In a high wind,” he once said, “even turkeys can fly.”

A shy man, he tended to efface himself in teams and collaborations. His letter may have been the spark that brought silicon to Silicon Valley and led, indirectly, to the hundreds of start-ups that established the age of the computer and the semiconductor. Yet his greatest pride was to be not just an enabler, but an inventor. To the end of his life, he called himself an engineer.

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Overview

Dec 4th 2003
From The Economist print edition

The **dollar** continued its slide, falling to an all-time low against the euro of just over $1.20, before recovering slightly. The greenback also fell to a five-year low against the British pound.

European **stockmarkets** rose to a 12-month high.

America's factories were booming in November. The Institute for Supply Management's (ISM) manufacturing index rose to 62.8, its highest level since 1983. The ISM's index of new manufacturing orders also hit a 20-year high. The ISM's index of America's service sector performed below expectations in November, falling to 60.1 from 64.7 in October. Services account for the bulk of America's GDP.

American productivity figures produced another 20-year high. The output per hour of American businesses grew by 9.4% at an annual rate in the third quarter, the fastest rate of growth since 1983.

In October, unemployment in the **euro area** held steady at 8.8%.

The economy of **Australia** grew by 2.6% in the year to the third quarter.

Canada's GDP grew by 1.0% in the year to the third quarter. Industrial production fell by 0.2% in the year to September.

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Output, demand and jobs

Dec 4th 2003
From The Economist print edition

% change on year ago

	GDP latest		GDP qtr*	The Economist poll GDP forecasts 2003	2004	Industrial production latest		Retail sales (volume) latest		Unemployment % rate latest		year ago
Australia	+ 2.6	Q3	+ 4.8	+ 2.6	+ 3.8	+ 1.3	Q2	+ 5.3	Q3	5.6	Oct	6.0
Austria	+ 0.7	Q2	+ 1.1	+ 0.7	+ 1.7	+ 2.5	May	– 4.0	Aug	4.5	Oct	4.3
Belgium	+ 0.7	Q3	+ 2.0	+ 1.3	+ 1.7	– 2.9	Sep	– 1.7	Sep	12.5	Nov†	11.6
Britain	+ 2.0	Q3	+ 3.1	+ 2.0	+ 2.7	– 1.0	Sep	+ 3.7	Oct	5.0	Sep††	5.3
Canada	+ 1.0	Q3	+ 1.1	+ 1.9	+ 3.0	– 0.2	Sep	+ 3.7	Aug	7.6	Oct	7.6
Denmark	– 0.8	Q3	– 1.2	+ 0.7	+ 2.1	+ 0.5	Sep	+ 3.4	Aug	6.4	Oct	5.3
France	– 0.2	Q3	+ 1.5	+ 0.2	+ 1.8	– 1.8	Sep	– 2.2	May	9.7	Oct	9.1
Germany	– 0.2	Q3	+ 0.9	nil	+ 1.6	– 3.6	Sep	– 2.1	Oct‡	10.5	Nov§	10.0
Italy	+ 0.5	Q3	+ 2.0	+ 0.4	+ 1.6	– 1.7	Sep	– 3.4	Aug	8.5	Jul	9.0
Japan	+ 2.3	Q3	+ 2.2	+ 2.6	+ 2.0	+ 3.6	Oct	– 1.8	Sep	5.2	Oct	5.5
Netherlands	– 1.1	Q3	+ 0.5	– 0.7	+ 1.1	– 1.2	Sep	– 7.4	Aug	5.4	Oct**	4.3
Spain	+ 2.4	Q3	+ 2.9	+ 2.3	+ 2.9	+ 2.0	Sep	+ 2.5	Sep	11.2	Oct	11.4
Sweden	+ 1.1	Q2	+ 1.1	+ 1.5	+ 2.4	+ 0.2	Sep	+ 4.7	Oct	5.1	Oct†	3.7
Switzerland	– 0.6	Q3	+ 1.0	– 0.4	+ 1.4	– 2.8	Q2	+ 2.7	Sep	3.8	Oct†	3.1
United States	+ 3.5	Q3	+ 8.2	+ 2.9	+ 4.2	+ 0.6	Oct	+ 7.8	Oct	6.0	Oct	5.8
Euro area	+ 0.3	Q3	+ 1.5	+ 0.5	+ 1.8	– 1.8	Sep	– 0.9	Aug	8.8	Oct	8.5
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*											
Finland	+ 0.8	Q2	+ 2.4	na	na	– 0.1	Oct	+ 5.3	Aug	8.3	Oct†	8.5
Greece	+ 4.5	Q2	+ 0.4	na	na	+ 2.1	Jul	na		na		na
Iceland	+ 2.7	Q2	na	na	na	– 0.3	2002	na		2.7	Sep†	2.2
Ireland	+ 2.1	Q2	na	na	na	– 2.7	Sep	+ 0.1	Sep	4.4	Oct	4.3
Luxembourg	+ 1.1	2002	na	na	na	+ 1.4	Sep	+ 1.2	Jun	4.0	Oct	3.2
New Zealand	+ 2.0	Q2	– 0.5	na	na	+ 2.5	Q2	+ 6.1	Q3	4.4	Q3	5.4
Norway	+ 0.2	Q3	+ 3.3	na	na	+ 3.7	Sep	+ 5.0	Oct	4.7	Q3	3.8
Portugal	– 2.3	Q2	+ 0.5	na	na	– 1.0	Oct	– 0.3	Sep	6.3	Q3†	5.1

*% change on previous quarter at an annual rate. †Not seasonally adjusted. ‡New series. ††Jul-Sep; claimant count rate 3% in Oct. §EU harmonised rate 9.3% in Oct. **Aug-Oct.

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Prices and wages

Dec 4th 2003
From The Economist print edition

% change on year ago

	Consumer prices		The Economist poll consumer prices forecast		Producer prices		Wages/earnings	
	latest	year ago	2003	2004	latest	year ago	latest	year ago
Australia	+ 2.6 Q3	+ 3.2	+ 2.8	+ 2.3	– 0.1 Q3	– 0.2	+ 5.1 Q3	+ 3.6
Austria	+ 1.0 Oct	+ 1.7	+ 1.3	+ 1.1	+ 2.0 Oct	+ 0.3	+ 2.3 Oct	+ 2.3
Belgium	+ 1.9 Nov	+ 1.1	+ 1.6	+ 1.5	– 0.9 Oct	+ 1.5	+ 1.9 Q3	+ 2.1
Britain	+ 2.6 Oct	+ 2.1	+ 2.7	+ 2.5	+ 1.4 Oct	+ 0.5	+ 3.6 Sep	+ 3.8
Canada	+ 1.6 Oct	+ 3.2	+ 2.7	+ 1.7	– 3.8 Oct	+ 2.4	+ 3.1 Sep	+ 2.4
Denmark	+ 1.4 Oct	+ 2.5	+ 2.2	+ 1.6	nil Oct	+ 0.8	+ 3.6 Q3	+ 3.9
France	+ 2.2 Oct	+ 1.9	+ 2.1	+ 1.6	+ 0.3 Oct	+ 0.8	+ 3.0 Q3	+ 3.5
Germany	+ 1.3 Nov	+ 1.2	+ 1.1	+ 1.0	+ 0.8 Oct	+ 0.9	+ 2.0 Sep	+ 2.6
Italy	+ 2.5 Nov	+ 2.8	+ 2.7	+ 2.2	+ 0.7 Oct	+ 1.6	+ 2.6 Oct	+ 2.1
Japan	nil Oct	– 0.9	– 0.2	– 0.2	– 0.4 Oct	– 1.6	+ 1.9 Oct	+ 1.3
Netherlands	+ 2.0 Nov	+ 2.8	+ 2.3	+ 1.7	+ 0.8 Oct	+ 2.3	+ 2.3 Oct	+ 3.4
Spain	+ 2.6 Oct	+ 4.0	+ 3.1	+ 2.6	+ 0.6 Oct	+ 1.7	+ 4.2 Q2	+ 4.0
Sweden	+ 1.4 Oct	+ 2.5	+ 2.2	+ 1.6	– 1.9 Oct	– 1.0	+ 2.5 Sep	+ 2.8
Switzerland	+ 0.5 Nov	+ 0.9	+ 0.6	+ 0.6	– 0.3 Oct	– 0.7	+ 1.8 2002	+ 2.5
United States	+ 2.0 Oct	+ 2.0	+ 2.3	+ 1.5	+ 3.4 Oct	+ 0.7	+ 2.4 Oct	+ 3.1
Euro area	+ 2.2 Nov	+ 2.3	+ 2.0	+ 1.6	+ 0.9 Oct	+ 1.1	+ 2.9 Q2	+ 3.0
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*							
Finland	+ 0.3 Oct	+ 1.5	na	na	– 0.9 Oct	+ 0.8	+ 4.3 Q2	+ 3.9
Greece	+ 3.3 Aug	+ 3.5	na	na	+ 2.2 Aug	+ 2.1	na	na
Iceland	+ 2.5 Nov	+ 2.4	na	na	+ 3.3 Nov	+ 6.0	+ 5.5 Oct	+ 5.9
Ireland	+ 2.3 Oct	+ 4.7	na	na	– 8.4 Oct	– 2.4	+ 8.7 Q2	+ 3.5
Luxembourg	+ 1.7 Oct	+ 2.2	na	na	+ 0.4 Sep	nil	+ 2.5 Sep	+ 1.6
New Zealand	+ 1.5 Q3	+ 2.6	na	na	+ 0.1 Q3	– 2.1	+ 2.3 Q3	+ 2.3
Norway	+ 1.6 Oct	+ 1.8	na	na	+ 2.1 Oct	+ 4.4	+ 4.3 Q3	+ 5.0
Portugal	+ 3.0 Oct	+ 4.0	na	na	– 0.8 Oct	+ 1.2	– 1.0 Sep	+ 0.1

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Economic forecasts

Dec 4th 2003
From The Economist print edition

The Economist poll of forecasters, December averages (previous month's, if changed)

	Real GDP, % change Low/high range		Real GDP, % change average		Consumer prices % increase		Current account % of GDP	
	2003	2004	2003	2004	2003	2004	2003	2004
Australia	2.3/3.2	3.1/4.3	2.6	3.8 (3.7)	2.8 (2.7)	2.3	−5.7(−5.6)	−4.9
Austria	0.5/1.0	1.2/2.2	0.7	1.7 (1.8)	1.3	1.1	nil	−0.1
Belgium	0.7/3.7	0.8/2.2	1.3 (0.9)	1.7 (1.8)	1.6 (1.5)	1.5 (1.3)	4.3 (4.7)	4.4 (4.8)
Britain	1.9/2.2	2.1/3.5	2.0	2.7	2.7	2.5 (2.4)	−1.9(−1.7)	−1.7 (−1.5)
Canada	1.7/2.0	2.4/3.9	1.9 (2.0)	3.0	2.7	1.7	1.8 (1.7)	1.4
Denmark	0.3/1.2	1.8/2.5	0.7 (0.8)	2.1 (2.0)	2.2	1.6	2.8 (2.7)	2.7
France	0.1/0.4	1.3/2.8	0.2	1.8 (1.7)	2.1 (2.0)	1.6 (1.5)	1.4	1.4
Germany	−0.2/0.1	0.9/2.2	nil	1.6	1.1	1.0 (0.9)	2.3 (2.0)	2.3 (2.0)
Italy	0.3/0.7	0.8/2.2	0.4	1.6	2.7	2.2 (2.1)	−1.0(−0.8)	−0.8 (−0.7)
Japan	2.5/2.9	0.8/2.9	2.6	2.0 (1.8)	−0.2 (−0.3)	−0.2 (−0.3)	2.9 (2.8)	2.9
Netherlands	−0.9/−0.3	0.5/1.8	−0.7 (−0.6)	1.1	2.3	1.7	2.6 (2.3)	2.8 (2.6)
Spain	2.1/2.4	2.5/3.5	2.3 (2.2)	2.9 (2.8)	3.1	2.6 (2.7)	−2.4	−2.3 (−2.2)
Sweden	1.1/1.8	1.8/3.2	1.5	2.4 (2.3)	2.2 (2.1)	1.6 (1.7)	4.2 (4.1)	4.1
Switzerland	−0.7/nil	0.8/2.2	−0.4 (−0.5)	1.4	0.6	0.6 (0.5)	11.0	10.9 (11.0)
United States	2.6/3.1	2.6/4.9	2.9 (2.8)	4.2 (3.9)	2.3	1.5 (1.4)	−5.1	−5.3
Euro area	0.2/0.6	1.3/2.6	0.5 (0.4)	1.8	2.0	1.6	0.4	0.5

Sources: ABN Amro, Deutsche Bank, Economist Intelligence Unit, Goldman Sachs, HSBC Securities, KBC Bank, Merrill Lynch, J.P. Morgan Chase, Morgan Stanley, Nordea, Decision Economics, BNP Paribas, Royal Bank of Canada, Citigroup, Scotiabank, UBS

Every month *The Economist* calculates the average of a group of forecasters' predictions for economic growth, inflation and current-account balances for 15 countries and for the euro area. The table also shows the highest and lowest projections for growth. The previous month's figures, where they are different, are shown in brackets. The panel has raised next year's growth forecast for America to 4.2%, up from 3.9% in November. It now expects Japan to grow faster than the euro area for the second year running. Japan is tipped to grow in 2004 by 2%, up from 1.8% last month. By contrast, the forecast of 1.8% for the euro area remains unchanged. The panel has made modest upgrades to next year's growth predictions for Australia, Denmark, France, Spain and Sweden. However, it has become somewhat gloomier about the outlook for Austria and Belgium in 2004.

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Money and interest rates

Dec 4th 2003
From The Economist print edition

	Money supply* % change on year ago			Interest rates % p.a. (Dec 3rd 2003)					
				3-mth money market		2-year	10-year gov't bonds		corporate
	narrow	broad		latest	year ago	gov't bonds	latest	year ago	bonds
Australia	+ 8.7	+13.2	Oct	5.37	4.84	5.70	5.94	5.52	6.70
Britain	+ 7.3	+ 7.4	Oct	3.97	3.94	4.58	5.02	4.67	5.75
Canada	+ 4.4	+ 5.7	Oct	2.68	2.71	3.18	4.88	5.19	6.27
Denmark	+ 9.0	+ 9.1	Oct	2.18	3.35	3.08	4.57	4.64	5.62
Japan	+ 5.6	+ 1.5	Oct	0.02	0.02	0.16	1.44	0.96	1.57
Sweden	+ 3.2	+ 6.0	Oct	2.71	3.80	3.26	4.93	5.01	4.00
Switzerland	+27.2	+ 9.8	Oct	0.28	0.74	-0.12	2.79	2.45	2.74
United States	+ 7.0	+ 6.0	Oct	1.10	1.33	2.06	4.41	4.24	5.79
Euro area†	+12.5	+ 8.0	Oct	2.16	2.99	2.81	4.38	4.48	4.29

*Narrow: M1 except Britain and Sweden M0, broad: M2 or M3 except Britain M4. †Germany for bonds. Benchmarks: US 30-year 5.20%, Japan No. 256 1.46%. Central bank rates: US fed funds 1.00%, ECB refinancing 2.00%, BOJ overnight call 0.001%, BOE repo 3.75%. Sources: Commerzbank, Danske Bank, J.P. Morgan Chase, Royal Bank of Canada, Stockholmsbörsen, UBS, Global Insight, Westpac, Thomson Datastream. Rates cannot be construed as banks' offers.

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The Economist commodity price index

Dec 4th 2003
From The Economist print edition

1995=100

	Nov 25th*	Dec 2nd*	% change on one month	% change on one year
Dollar index				
All items	86.6	88.1	+ 2.1	+15.7
Food	85.9	87.8	+ 2.5	+10.8
Industrials				
All	87.5	88.6	+ 1.5	+23.0
Nfa†	90.2	89.5	– 0.7	+21.2
Metals	85.3	87.8	+ 3.4	+24.5
Sterling index				
All items	80.5	80.4	– 0.9	+ 4.8
Euro index				
All items	96.6	95.9	– 2.9	– 4.6
Yen index				
All items	101.1	102.2	+ 1.6	+ 1.3
Gold				
$ per oz	392.25	403.25	+ 6.2	+26.2
West Texas Intermediate				
$ per barrel	29.75	30.74	+ 6.6	+12.5

* Provisional. † Non-food agriculturals.

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Stockmarkets

Dec 4th 2003
From The Economist print edition

Market indices

	Dec 3rd	2003 high	2003 low	% change on one week	% change on record high	% change on Dec 31st 2002 in local currency	% change on Dec 31st 2002 in $ terms
Australia (All Ordinaries)	3,220.1	3,310.6	2,673.3	+ 0.7	– 6.4	+ 8.2	+41.4
Austria (ATX)	1,510.6	1,510.6	1,120.2	+ 3.0	–13.0	+31.3	+51.5
Belgium (Bel 20)	2,206.3	2,206.3	1,426.6	+ 1.8	–40.1	+ 9.0	+25.7
Britain (FTSE 100)	4,392.0	4,410.0	3,287.0	+ 0.5	–36.6	+11.5	+19.6
Canada (Toronto Composite)	7,860.4	7,927.6	6,228.6	nil	–31.0	+18.8	+44.4
Denmark (KBX)	212.4	222.6	145.0	+ 0.5	–29.6	+27.7	+47.1
France (SBF 250)	2,394.4	2,394.4	1,630.1	+ 2.2	–45.5	+16.6	+34.5
(CAC 40)	3,501.9	3,501.9	2,403.0	+ 2.5	–49.4	+14.3	+31.9
Germany (DAX)	3,875.7	3,875.7	2,203.0	+ 4.4	–51.9	+34.0	+54.6
Italy (BCI)	1,281.9	1,281.9	959.4	+ 1.8	–41.3	+17.4	+35.5
Japan (Nikkei 225)	10,326.4	11,161.7	7,607.9	+ 1.8	–73.5	+20.4	+32.0
(Topix)	1,016.1	1,105.6	770.6	+ 1.4	–64.8	+20.5	+32.2
Netherlands (AEX)	339.1	343.0	218.4	+ 2.0	–51.7	+ 5.1	+21.2
Spain (Madrid SE)	781.0	781.0	576.8	+ 1.9	–31.9	+23.2	+42.1
Sweden (Affarsvarlden Gen)	185.2	186.3	127.8	+ 2.2	–53.7	+27.6	+50.0
Switzerland (Swiss Market)	5,440.7	5,440.7	3,675.4	+ 2.7	–35.3	+17.5	+26.2
United States (DJIA)	9,873.4	9,899.1	7,524.1	+ 1.0	–15.8	+18.4	+18.4
(S&P 500)	1,064.7	1,070.1	800.7	+ 0.6	–30.3	+21.0	+21.0
(NASDAQ Comp)	1,960.3	1,989.8	1,271.5	+ 0.4	–61.2	+46.8	+46.8
Europe (FTSE Eurotop 300)*	945.8	946.2	682.7	+ 1.6	–44.5	+10.4	+27.3
Euro area (FTSE Ebloc 100)*	818.8	818.8	565.7	+ 2.7	–47.2	+14.0	+31.5
World (MSCI)†	990.5	989.3	710.8	+ 1.6	–31.6	+25.0	+25.0
World bond market (Citigroup)‡	584.2	584.2	518.6	+ 0.6	nil	+11.2	+11.2

*In euro terms. †Morgan Stanley Capital International index includes individual markets listed above plus eight others, in dollar terms. ‡Citigroup World Government Bond Index, total return, in $ terms.

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Trade, exchange rates and budgets

Dec 4th 2003
From The Economist print edition

	Trade balance*, $bn latest 12 months		Current account $bn latest 12 mths		The Economist poll % of GDP, forecast 2003	2004	Exchange rate trade-weighted† 1990=100 Dec 3rd	year ago	Currency units per $ Dec 3rd	year ago	per £	per euro	per ¥100	Budget balance % of GDP 2003‡
Australia	− 14.3	Oct	− 27.2	Q3	− 5.7	− 4.9	87.2	75.0	1.36	1.78	2.35	1.65	1.26	0.8
Austria	− 0.6	Aug	+ 0.5	Sep	nil	− 0.1	102.6§	100.8	0.83	1.00	1.43	–	0.76	-1.3
Belgium	+ 20.7	Sep	+ 11.2	Jun	+ 4.3	+ 4.4	102.6§	100.0	0.83	1.00	1.43	–	0.76	0.2
Britain	− 73.9	Sep	− 28.6	Q2	− 1.9	− 1.7	100.1	106.2	0.58	0.64	–	0.70	0.53	-2.9
Canada	+ 41.5	Sep	+ 16.7	Q3	+ 1.8	+ 1.4	88.8	76.3	1.30	1.56	2.25	1.57	1.20	1.0
Denmark	+ 9.7	Sep	+ 5.3	Sep	+ 2.8	+ 2.7	106.3	103.3	6.15	7.43	10.6	7.44	5.68	0.8
France	+ 5.6	Sep	+ 20.6	Sep	+ 1.4	+ 1.4	106.0§	102.9	0.83	1.00	1.43	–	0.76	-4.0
Germany	+137.2	Sep	+ 56.4	Sep	+ 2.3	+ 2.3	103.5§	99.9	0.83	1.00	1.43	–	0.76	-4.1
Italy	+ 1.6	Sep	− 20.9	Sep	− 1.0	− 0.8	75.6§	73.4	0.83	1.00	1.43	–	0.76	-2.7
Japan	+ 97.7	Sep	+123.3	Sep	+ 2.9	+ 2.9	136.8	128.8	108	125	187	131	–	-7.4
Netherlands	+ 31.5	Sep	+ 17.7	Q3	+ 2.6	+ 2.8	102.1§	99.1	0.83	1.00	1.43	–	0.76	-2.4
Spain	− 49.2	Aug	− 23.1	Aug	− 2.4	− 2.3	76.9§	75.0	0.83	1.00	1.43	–	0.76	0.1
Sweden	+ 17.8	Oct	+ 14.8	Q3	+ 4.2	+ 4.1	82.8	78.4	7.41	9.07	12.8	8.97	6.85	0.2
Switzerland	+ 6.0	Oct	+ 35.0	Q2	+11.0	+10.9	111.3	114.4	1.29	1.47	2.22	1.56	1.19	na
United States	−542.6	Sep	−528.7	Q2	− 5.1	− 5.3	96.6	113.9	–	–	1.73	1.21	0.92	-4.9
Euro area	+ 84.3	Sep	+ 36.8	Sep	+ 0.4	+ 0.5	91.1	82.8	0.83	1.00	1.43	–	0.76	-2.7
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*													
Finland	+ 13.7	Sep	+ 10.0	Sep	na	na	81.5§	79.0	0.84	1.00	1.45	–	0.78	2.6
Greece	− 24.7	Sep	− 10.7	Sep	na	na	59.2§	58.0	0.84	1.00	1.45	–	0.78	-1.6
Iceland	− 0.2	Oct	− 0.2	Q2	na	na	95.0**	93.0	75.1	85.1	130	90.9	69.4	-1.0
Ireland	+ 37.8	Sep	− 2.1	Q2	na	na	94.2§	89.1	0.84	1.00	1.45	–	0.78	-1.0
Luxembourg	− 3.4	Sep	+ 1.5	Q2	na	na	102.6§	100.0	0.84	1.00	1.45	–	0.78	-0.3
New Zealand	− 1.8	Oct	− 2.9	Q2	na	na	103.1	91.6	1.57	2.00	2.71	1.90	1.45	2.6
Norway	+ 28.0	Oct	+ 27.1	Sep	na	na	98.9	107.1	6.85	7.27	11.8	8.29	6.33	9.8
Portugal	− 12.9	Aug	− 7.8	Aug	na	na	93.6**	91.2	0.84	1.00	1.45	–	0.78	-2.9

*Merchandise. Australia, Britain, France, Canada, Japan and United States imports fob, exports fob. All others cif/fob. †Bank of England except §IMF, September average. ‡OECD forecast. **IMF, July average.

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Government budget balances

Dec 4th 2003
From The Economist print edition

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Overview

Dec 4th 2003
From The Economist print edition

Brazil's economy perked up. GDP grew by 0.4% in the third quarter, after shrinking for two quarters in a row. **Chile's** industrial production rose by 1.9% in the year to October.

Hong Kong's economy grew by 4.0% in the year to the third quarter. Industrial production in **Singapore** rose by 19.3% in the year to October.

Consumer-price inflation in **Turkey** ran at 19.3% in the year to November, just below the IMF's 20% inflation target.

Hungary's economy grew by 2.9% in the year to the third quarter, and the forint fell to an all-time low against the euro.

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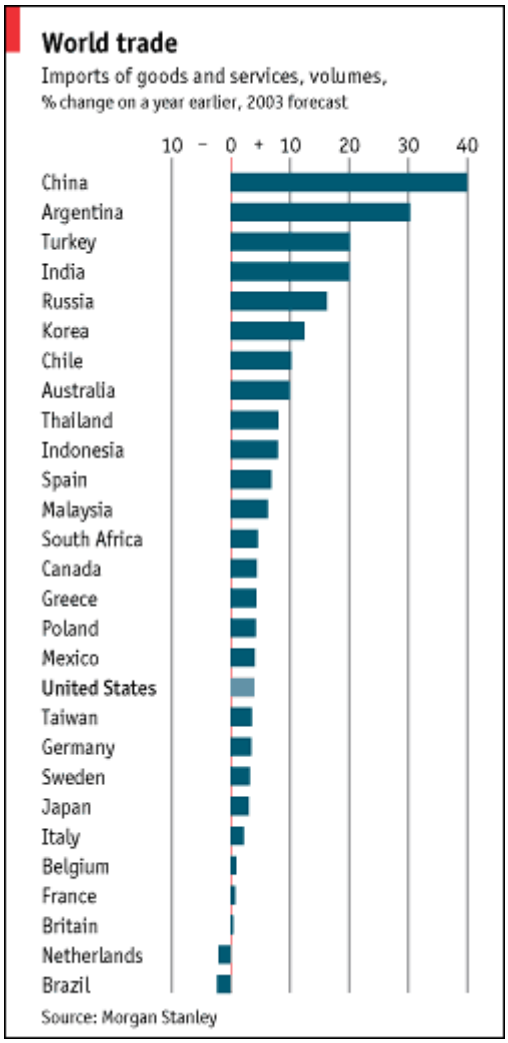
World trade

Dec 4th 2003
From The Economist print edition

According to Morgan Stanley, an investment bank, Asia's role in world trade is poised for continued growth. Asian countries are likely to generate 55% of global trade growth in 2003, with China accounting for most of that. Chinese import volumes are projected to rise by 40% in 2003, says Morgan Stanley. In contrast, the volume of American imports should see only a slight increase in 2003, while Brazil's import volumes are expected to contract. Taiwan, Japan and Korea have gained the most from China's import growth, says the report.



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Economy

Dec 4th 2003
From The Economist print edition

	% change on year ago						Latest 12 months, $bn				Foreign reserves* $bn, latest	
	GDP		Industrial production		Consumer prices		Trade balance		Current account			
China	+ 9.1	Q3	+17.2	Oct	+ 1.8	Oct	+20.6	Oct	+35.4	2002	383.9	Sep
Hong Kong	+ 4.0	Q3	–12.5	Q2	– 2.7	Oct	– 7.7	Oct	+18.4	Q2	112.4	Oct
India	+ 5.7	Q2	+ 6.5	Sep	+ 2.9	Sep	–13.1	Oct	+ 2.8	Q2	88.7	Oct
Indonesia	+ 3.9	Q3	+ 4.7	Jul	+ 5.3	Nov	+26.1	Oct	+ 6.7	Q1	33.5	Oct
Malaysia	+ 3.5	Q3	+ 9.7	Sep	+ 1.3	Oct	+17.6	Sep	+10.1	Q2	39.7	Oct
Philippines	+ 4.4	Q3	– 3.7	Sep	+ 3.1	Oct	– 1.4	Sep	+ 2.8	Jul	13.5	Oct
Singapore	+ 1.7	Q3	+19.3	Oct	+ 0.6	Oct	+17.4	Oct	+25.6	Q3	92.5	Oct
South Korea	+ 2.3	Q3	+ 6.6	Sep	+ 3.4	Nov	+14.5	Nov	+ 8.0	Oct	143.2	Oct
Taiwan	+ 4.2	Q3	+ 9.0	Oct	– 0.1	Oct	+19.0	Oct	+28.8	Q3	196.6	Oct
Thailand	+ 5.8	Q2	+10.5	Sep	+ 1.8	Nov	+ 4.6	Sep	+ 8.5	Sep	39.3	Oct
Argentina	+ 7.6	Q2	+10.8	Sep	+ 3.6	Nov	+16.9	Oct	+10.2	Q2	13.4	Sep
Brazil	– 1.5	Q3	+ 4.2	Sep	+14.0	Oct	+23.9	Nov	+ 3.7	Oct	52.7	Sep
Chile	+ 3.0	Q3	+ 1.9	Oct	+ 1.2	Oct	+ 2.6	Oct	– 0.3	Q3	15.7	Oct
Colombia	+ 4.0	Q3	+ 5.6	Sep	+ 6.6	Oct	– 0.1	Aug	– 1.7	Q2	10.5	Oct
Mexico	+ 0.4	Q3	– 0.6	Sep	+ 4.0	Oct	– 6.0	Oct	–11.5	Q2	56.2	Oct
Peru	+ 3.6	Sep	+ 2.6	Sep	+ 1.3	Oct	+ 0.4	Sep	– 1.2	Q3	9.1	Oct
Venezuela	– 7.1	Q3	–13.6	Aug	+25.6	Oct	+14.6	Q2	+ 8.9	Q3	14.5	Sep
Egypt	+ 3.1	2003†	+ 4.2	2002†	+ 4.5	Aug	– 7.1	Mar	+ 1.9	Q2	13.4	Jul
Israel	+ 2.8	Q3	+ 6.0	Sep	– 2.6	Oct	– 6.4	Oct	nil	Q2	24.9	Oct
South Africa	+ 1.6	Q3	– 3.6	Sep	+ 1.5	Oct	+ 2.6	Oct	– 0.9	Q2	6.5	Oct
Turkey	+ 3.9	Q2	+12.7	Sep	+19.3	Nov	–20.4	Sep	– 4.7	Aug	32.9	Oct
Czech Republic	+ 2.1	Q2	+ 5.2	Sep	+ 0.4	Oct	– 2.3	Oct	– 5.0	Q2	25.6	Oct
Hungary	+ 2.9	Q3	+ 5.6	Sep	+ 4.9	Oct	– 3.9	Sep	– 5.3	Sep	12.5	Oct
Poland	+ 3.8	Q2	+12.1	Oct	+ 1.3	Oct	–10.2	Oct	– 4.8	Sep	32.5	Oct
Russia	+ 7.2	Q2	+ 7.2	Oct	+13.1	Oct	+56.4	Sep	+37.9	Q3	61.2	Oct
MORE COUNTRIES	Data for the countries below are not provided in printed editions of *The Economist*											
Estonia	+ 3.5	Q2	+ 9.1	Oct	+ 1.0	Oct	– 1.8	Sep	– 1.5	Q3	1.2	Sep
Latvia	+ 6.2	Q2	+ 9.4	Sep	+ 3.3	Oct	– 1.9	Sep	– 0.9	Sep	1.4	Sep
Lithuania	+ 8.4	Q3	na		– 1.4	Oct	– 2.4	Sep	– 0.9	Q2	2.8	Sep
Slovakia	+ 3.8	Q2	+ 3.9	Sep	+ 9.6	Oct	– 1.2	Sep	+ 1.1	Jul	10.0	Sep
Slovenia	+ 2.1	Q2	+ 0.9	Sep	+ 5.1	Nov	– 0.5	Aug	+ 0.1	Sep	7.6	Aug
Pakistan	+ 5.1	2003†	+ 7.2	Jun	+ 3.5	Oct	– 1.2	Oct	+ 3.6	Q3†	9.9	Sep
Saudi Arabia	+ 1.0	2002	na		– 1.2	Jul	+41.8	2002	+11.9	2002	22.4	Sep

*Excluding gold, except Singapore; IMF definition. †Year ending June.

Sources: National statistics offices, central banks and stock exchanges; Thomson Datastream; Economist Intelligence Unit; Reuters; J.P. Morgan Chase; Hong Kong Monetary Authority; Centre for Monitoring Indian Economy; FIEL; EFG-Hermes; Bank Leumi Le-Israel; Standard Bank Group; Akbank; Deutsche Bank

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Financial markets

Dec 4th 2003
From The Economist print edition

	Currency units			Interest rates	Stockmarkets	% change on		
	per $		per £	short-term	Dec 3rd		Dec 31st 2002	
	Dec 3rd	year ago	Dec 3rd	% p.a.		one week	in local currency	in $ terms
China	8.28	8.28	14.3	na	1,512.4	+2.4	+ 6.6	+ 6.6
Hong Kong	7.76	7.80	13.4	0.24	12,361.2	+2.3	+ 32.6	+ 33.2
India	45.6	48.2	78.8	4.94	5,221.9	+6.7	+ 54.6	+ 62.5
Indonesia	8,488	8,990	14,667	8.82	643.9	+4.3	+ 51.5	+ 59.8
Malaysia	3.80	3.80	6.57	3.03	795.6	+1.4	+ 23.1	+ 23.1
Philippines	55.4	53.6	95.7	8.06	1,357.8	+1.0	+ 33.3	+ 28.5
Singapore	1.72	1.77	2.97	0.75	1,737.5	+2.9	+ 29.6	+ 30.9
South Korea	1,196	1,216	2,066	4.32	808.3	+3.2	+ 28.8	+ 27.8
Taiwan	34.1	34.8	58.8	1.05	5,885.0	+0.4	+ 32.2	+ 35.0
Thailand	39.9	43.7	69.0	1.38	659.4	+4.5	+ 85.0	+ 99.8
Argentina	2.98	3.54	5.15	4.63	1,013.1	+2.3	+ 93.0	+117.7
Brazil	2.93	3.70	5.06	17.33	20,539.6	+4.3	+ 82.3	+120.3
Chile	605	711	1,046	2.76	7,265.7	+1.6	+ 44.7	+ 72.2
Colombia	2,812	2,808	4,860	7.85	2,215.7	−0.1	+ 37.7	+ 40.4
Mexico	11.3	10.2	19.4	6.31	8,553.7	+2.0	+ 39.6	+ 29.8
Peru	3.48	3.55	6.01	2.52	2,221.5	+3.7	+ 59.6	+ 61.3
Venezuela	1,598	1,317	2,762	17.98	21,648.4	+2.4	+170.1	+134.4
Egypt	6.16	4.63	10.65	6.89	10,943.5	−1.4	+103.7	+ 53.1
Israel	4.43	4.65	7.65	2.47	506.0	−0.1	+ 52.2	+ 63.3
South Africa	6.22	9.20	10.7	7.45	9,708.1	+1.1	+ 4.6	+ 44.4
Turkey	1,451,000	1,549,000	2,507,473	25.00	16,389.6	+12.1	+ 58.0	+ 80.8
Czech Republic	26.8	31.0	46.3	2.08	621.5	−0.5	+ 34.9	+ 51.3
Hungary	224	237	388	14.93	9,002.7	−2.2	+ 15.4	+ 15.6
Poland	3.85	3.98	6.65	5.89	19,854.9	+4.2	+ 38.2	+ 37.8
Russia	29.7	31.9	51.3	16.00	548.5‡	+1.4	+ 42.0	+ 52.8
EMF (MSCI)*	1.00	1.00	1.73	na	423.7	+3.6	+ 45.0	+ 45.0
EMBI+†	1.00	1.00	1.73	na	287.8	+0.4	+ 25.8	+ 25.8

*Emerging Mkts Free. †J.P. Morgan Chase's Emerging Mkts Bond Index Plus. ‡ In $ terms.

Sources: National statistics offices, central banks and stock exchanges; Thomson Datastream; Economist Intelligence Unit; Reuters; J.P. Morgan Chase; Hong Kong Monetary Authority; Centre for Monitoring Indian Economy; FIEL; EFG-Hermes; Bank Leumi Le-Israel; Standard Bank Group; Akbank; Deutsche Bank

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